The Action Crisis
in the Disengagement Process from Personal Goals

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Abstract

Apart from persistently pursuing one's personal goals, disengaging from goals that have become unrealistic or too troublesome is essential for successful self-regulation and well-being. Recent findings suggest that goal disengagement is often preceded by an action crisis, an intrapsychic conflict between the opposing options of holding on to and letting go of a personal goal. Extending previous work, this dissertation addresses how the action crisis fits into the goal disengagement process by instigating changes on the level of individuals' goal-related experience and behavior. It shows that an action crisis predicts change in individuals' subjective appraisal of goal desirability and attainability, and that, reversely, goal attainability predicts change in the experience of action crisis. It suggests that an action crisis buffers (goal-related) performance, and that it may threaten a person's self-integrity. Drawing from this, it tests whether a strategy that alleviates self-threat helps to form a preference for persistence or disengagement that is based on the subjective desirability and attainability of the goal in question. In sum, this dissertation extends previous knowledge of how an action crisis is experienced, how it shapes and defines the goal disengagement process, and offers a starting point for the investigation of interventions that may help to resolve it in either way.

Neben der Persistenz in der Verfolgung persönlicher Ziele ist die Ablösung von Zielen, die sich als nicht erreichbar oder zu kostenreich erweisen, die zweite Facette erfolgreichen Zielstrebens, die für die Aufrechterhaltung subjektiven Wohlbefindens von Bedeutung ist. Forschungsbefunde zeigen, dass der Zielablösung häufig eine Handlungskrise vorangeht, die als intrapsychischer Konflikt zwischen der Weiterverfolgung und Aufgabe eines persönlichen Ziels definiert ist. Die vorliegende Dissertation untersucht, wie sich eine Handlungskrise durch Veränderungen auf der Ebene zielbezogenen Erlebens und Verhaltens in den Prozess der Zielablösung einfügt und diesen gestaltet. Die Untersuchung zeigt, dass sich im Zuge einer Handlungskrise die Sicht auf den Wert und die Realisierbarkeit des Ziels verändert, die wahrgenommene Zielrealisierbarkeit aber auch das künftige Erleben einer Handlungskrise vorhersagt. Sie zeigt auf, dass in Folge einer Handlungskrise die (zielbezogene) Leistung abnimmt und die Selbstintegrität einer Person in Frage gestellt wird. Darauf aufbauend wird untersucht, ob eine Strategie zur Wiederherstellung der Selbstintegrität die Entscheidungsfindung für oder gegen die Weiterverfolgung des Ziels unterstützt. Damit trägt die Arbeit zum Verständnis des Zielablösungsprozesses bei und bietet einen Ansatpunkt für die Identifikation von Strategien zur Lösung einer Handlungskrise.

Summary

Part I of this dissertation thesis shows that reciprocal influences between an action crisis and appraisals of goal desirability and attainability shape the disengagement process from personal goals. Two longitudinal studies reveal that an action crisis in the goal to complete a university degree predicts a devaluation of its desirability and attainability, and reversely, low goal attainability (but not desirability) predicts an increase in action crisis. Findings further suggest that life satisfaction benefits from devaluing goal desirability when disengagement is considered (i.e, in an action crisis) or actually immiment.

Part II points out that an action crisis not only affects individuals' goal appraisals but also the measurable outcomes of their goal pursuit. Students with more severe action crises in the goal to complete their university degree achieve a lower academic performance at the end of the term, controlling for prior-term performance levels. Individuals in whom the experience of action crisis (vs. unobstructed goal striving) had experimentally been induced perform worse in a subsequent task, suggesting a causal performance effect of the action crisis that spills over to unrelated, temporally close tasks.

Part III tests the assumption that an action crisis is self-threatening. Findings of a correlational and an experimental study suggest that merely reflecting on a personal goal about which an action crisis is experienced (vs. unobstructed goal striving) causes negative affect, detriments self-worth, and buffers expectations to perform well on an upcoming task.

Building on this knowledge, Part IV documents a series of experiments testing whether individuals in an action crisis benefit from a strategy known to alleviate self-threat. Based on findings that self-affirmation enables people to impartially process threatening information and rely on self-relevant experiences, it was hypothesized that affirming an unrelated value increases reliance on the goal's attainability and desirability when forming a preference about whether to hold or to fold. While two studies offered supportive evidence, two studies did not. Potential explanations are given and limitations discussed.

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Introduction

> Nothing is so insufferable to man as to be completely at rest, without passions, without business, without diversion, without study. (Pascal, 1660/2003, p. 37)

We form our lives by setting and pursuing goals. From an infinite number of potential occupations, we choose the ones that appear to us as paramount and purposeful, from which we promise ourselves fulfillment and happiness, or, at least, the absence of punishment and negative self-regard. Those chosen goals, the "internal representations of desired states" (Austin & Vancouver, 1996, p. 338) that we wish to achieve in the future or to maintain, we devote a large part of our precious, since limited time. We organize our daily routine to serve their attainment, allow them to occupy our consciousness, and base our well-being on the current status of their pursuits (Austin & Vancouver, 1996; Brunstein, 1993; Emmons, 2003; Klinger, 1977; Moskowitz & Grant, 2009).

In light of the defining properties of personal goals, a lot of importance is placed on their attainment. However, the pursuit of most high-level goals is not completely clear of obstacles, and few of our goals would ever be achieved without sustained effort and perseverance even in the face of occasional adversity (Brandstätter & Schüler, 2013; Feather, 1962; Heckhausen, 1991). Therefore, the pledge to be persistent and never give up on personal dreams is for many individuals source of inspiration and one of the most prominent in popular guidebooks on motivation and goal striving. It is this capacity that ultimately leads individuals to success, and contributes to the continued existence and viability of our society (Brandstätter & Herrmann, in press; Wrosch, Scheier, Carver, & Schulz, 2003).

The goal concept has developed into a key unit also in the scientific study of human motivation (Austin & Vancouver, 1996; Carver & Scheier, 2005; Emmons, 2003), where it has been investigated under a variety of terms, including current concerns (Klinger, 1975), personal strivings (Emmons, 1991), personal projects (Little, 1983), and personal goals (Brunstein, 1993; Sheldon & Kasser, 1998). While goals can theoretically reside on all levels of abstraction, and many low-level goals are trivial and without much relevance for well-being (Emmons, 2003), the noted approaches focus on the mid- and high-level goals that are subjectively important and pursued over prolonged periods of time.

With the aim to identify conditions under which personal goals contribute to well-being (Brunstein, 1993; Carver & Scheier, 1998; Emmons, 2003), for long, the driving

concern in motivation and volition psychology has been to understand how individuals can reduce discrepancies to their goals, by investigating processes related to goal selection (*motivation*) and goal striving (*volition*). With the predominant focus on goal attainment, it has to some extent been neglected that persistence can become futile and even produce cost. This may, for instance, apply when a discrepancy cannot be closed because the goal is out of reach (Brandstätter, 2003; Janoff-Bulman & Brickman, 1982; Wrosch et al., 2003). Then, disengagement is imperative to live an overall happy and fulfilled life.

A dark side of persistence

The dark side of unmistrusted persistence in the face of adversity has first been studied in related disciplines. The investigation was based on the observation in politics and business that individuals sometimes persist in an initiated course of action, even though it seems quite obvious that continued investments (e.g., time, money) will not yield the hoped-for success. In social and organizational psychology, the phenomenon has evoked great interest under the nearly synonymous terms *escalation of commitment* (Staw, 1976, 1981) and *entrapment* (Brockner, 1992), both describing the tendency to become locked in a previously chosen, yet, failing course of action by investing new resources. Taking similar lines, *sunk cost* (Arkes & Blumer, 1985) refers to the irrational human propensity to continue actions once having invested in them, unconsidered their outcomes.

The two main explanatory approaches to misguided persistence are based on self-justification theory (Aronson, 1968) and the principle of loss aversion derived from prospect theory (Kahneman & Tversky, 1979). Self-justification theory, an extension of theory of cognitive dissonance (Festinger, 1957), posits that when a course of action fails that individuals feel responsible for, they may become entrapped because they do not want to admit to themselves and others that the decision to initiate the action was wrong. As deviating from the initiated path would be visual proof of exactly this, people choose to reaffirm their commitment to the failing action. A highly credible means to demonstrate one's trust in a chosen path is to allocate more resources in it (Brockner, 1992; Staw, 1976).

The prospect-theoretical explanatory approach builds on another defining feature of entrapment situations, namely the uncertainty whether additional investments will turn the failing project around (Brockner, 1992). Depending on the ultimate outcome, which is unknown, allocated resources will turn out to be worthwhile investments that led to success, or regrettable expenses that were made in vain. Drawing from the basic principle that people

are loss-averse, but risk-seeking in the domain of loss (Kahneman & Tversky, 1979), the approach predicts that, when confronted with a failing project, individuals will not accept the sure loss, but invest even more, often throwing good money after bad (Brockner, 1992).

Studies on *entrapment* and *escalation of commitment* typically have experimentally manipulated feedback (negative vs. positive) and the need to justify prior resource allocations, for instance, by varying levels of personal responsibility (high vs. low). Often, this has been done in the context of business cases where students with an affiliation to management had to partition investments among several divisions of a fictional company. If resource allocations were higher among subjects responsible (vs. not responsible) for a failing first investment, this was seen as indicative of escalation of commitment / entrapment and the operation of self-justification concerns (Schultze, Pfeiffer, & Schulz-Hardt, 2012; Staw, 1976). Other studies have linked the self-reported motivation to justify prior actions with behavioral measures of escalation (Brockner, 1992; Strube & Lott, 1984).

The major contribution of this strand of research has been to point out that persistence may not only become futile, but produce high costs. Given that explanatory approaches to misguided persistence jointly assume that at the heart of the phenomenon is experienced self-threat, it is surprising how few studies have explicitly tested this claim; usually, the need for self-justification is simply inferred from the observation that people stay on course (Brandstätter, 2003). A notable exception are studies by Zhang and Baumeister (2006), who experimentally manipulated self-threat and showed that it leads to entrapment. A second limitation is the almost exclusive study of assigned task goals and investment decisions, questioning the generalizability of the phenomenon to personal goals (Brandstätter, 2003). Addressing this limitation, the present research draws a link between the experience of self-threat and an action crisis, a phase in personal goal striving in which multiple setbacks have been experienced and giving up has become an option (Brandstätter, 2003).

Goal disengagement is beneficial, sometimes

After a long period of undue neglect, the topic of goal disengagement is increasingly studied also in the context of personal goals (Brandstätter, 2003; Brandtstädter & Rothermund, 2002; Carver & Scheier, 2005; Wrosch, Scheier, Carver, & Schulz, 2003). There is now scientific consensus that persistence is only one side of the coin, and effective self-regulation and maintenance of well-being likewise require an individual to disengage from goals that are unattainable or too costly. As no one goes through a life without being confronted with a goal

that cannot be attained, the position has been taken that disengagement is an inevitable aspect of life, that "everyone must quit sometimes" (Wrosch et al., 2003, p. 2).

The advantages of disengaging from an unattainable goal are twofold. The first is related to the circumstance that life is short and resources are limited, implying that individuals have to constraint themselves to a finite number of goals (Wrosch et al., 2003). Sticking to a futile endeavor is a waste of resources, as their investment in the chosen path does not have the desired effect, and they are no longer available for more promising projects. Accordingly, disengaging from a futile goal means to free precious resources. The second advantage of disengagement is to protect individuals from the harmful consequences to well-being and self-esteem that arise from repeated failure in trying to attain an unattainable goal. Evidently, not only giving up, but also holding on can have negative implications for an individual's sense of self (Janoff-Bulman & Brickman, 1982; Wrosch et al., 2003).

Despite the occasional importance of letting go, researchers acknowledge that doing so is difficult, especially when important goals are at stake. Successful disengagement not only requires people to stop investing in a personal goal, but also to relinquish goal commitment – if efforts were ceased while remaining committed, high distress would have to be expected (Wrosch et al., 2003). Because "the self is partly made up of the person's goals" (Carver & Scheier, 2005, p. 528), disengagement can require to redefine one's identity in some aspect (Wrosch et al., 2003). While the phenomenon of maladaptive persistence is well-known in the economic and political context, also in personal goal striving, one can see people clinging to unfulfilled intimate relationships, persisting with unpleasant courses of studies, and sticking to unprofitable self-employments or creative projects (Brandstätter & Herrmann, 2015).

In the following sections, influential theoretical approaches in the field of disengagement from personal goals will be introduced that build the theoretical framework of this research. Then, the concept of action crisis will be presented, which was the starting point of this investigation.

Factors facilitating (or hindering) goal disengagement

Previous research on goal disengagement has identified a host of different factors that makes it easier or more difficult for a person to give up (Wrosch et al., 2003). This chapter does not provide a comprehensive overview, but highlights some factors related to the goal and the person. In research on escalation of commitment and entrapment, many situational factors, moreover, have been examined (Sleesman, Conlon, McNamara, & Miles, 2012), often

without a clear theoretical framework (Brandstätter, 2003). Examples for situational factors that make disengagement more difficult are high investments and low estimated distance to goal completion (Arkes & Blumer, 1985). On the contrary, alternatives can make it easier to give up (Aspinwall & Richter, 1999).

Goal-related factors

A long tradition of expectancy-value models (Atkinson, 1964; Feather, 1982; Vroom, 1964) suggests that the motivation to pursue a goal is defined by its value (cf. desirability, importance) as well as the expectancy that it can be attained (cf. attainability). Accordingly, the subjective value of a goal has been highlighted as crucial determinant for the ease with which individuals let go. Whereas trivial goals are easy to disengage from, the higher the goal in the individual's goal hierarchy, the closer connected to his/her core values and self-definition, and the less easily substitutable, the more painful and troublesome it is to give up (Carver & Scheier, 2005; Klinger, 1975, 1977; Wrosch et al., 2003). It has been argued that for highly valued goals, even low outcome expectancies suffice to convince people to hold on. However, when goal attainability drops below a certain threshold and even maximal effort seems futile, people will give up (Brandtstädter & Rothermund, 2002; Brehm & Self, 1989; Carver & Scheier, 1998; Wrosch et al., 2003). Wrosch and colleagues (2003) suggested that other things being equal, a higher clarity with which people see their goal's attainability should facilitate decisions about persistence and disengagement.

Person-related factors

Individuals vary widely in how they respond to unattainable goals (Brandtstädter & Renner, 1990; Wrosch, Scheier, & Miller, 2013). Accordingly, interindividual difference variables were identified. Two of the most prominent dispositional approaches to goal disengagement are presented below.

The *dual process model of assimilative and accommodative coping* (Brandtstädter & Rothermund, 2002) suggests that individuals have two kinds of coping processes at their disposal to reduce discrepancies between factual and desired life circumstances: assimilation and accommodation. Assimilation includes intentional agency directed at modifying one's environment to come in line with a desired outcome. Accommodation implies a change of cognitions and valuations that helps to deconstrue a discrepancy that cannot be genuinely closed. Hence, accommodation corresponds to neutralization more than actual problem

solving (Brandtstädter & Rothermund, 2002). To successfully disengage, people have to switch from the assimilative to the accommodative coping mode. How smoothly this transition proceeds is, apart from characteristics of the goal and the situation, thought to be influenced by individuals' habitual tendency to engage in the assimilative and accommodative coping mode. These habitual tendencies can be assessed by questionnaire (Brandtstädter & Renner, 1990): The Tenacious Goal Pursuit Scale, assessing the tendency to tenaciously adhere to goals even in the face of adversity and under high risk of failure (e.g., "If I run into problems, I usually double my efforts"), corresponds to assimilative coping. The Flexible Goal Adjustment Scale, assessing the tendency to easily accept, find meaning in, or positively interpret discrepancies (e.g., "In general, I am not upset very long about an opportunity passed up"), corresponds to accommodative coping (Brandstätter & Renner, 1990).

Even though the subscales are only weakly correlated, studies by Brandstätter and Renner (1990) showed that both are linked to well-being (i.e., optimism, life satisfaction, perceived control, lower depression). The main empirical interest has been to investigate age-related differences in Tenacious Goal Pursuit and Flexible Goal Adjustment. In cross-sectional comparisons, older adults scored higher on the flexibility subscale than younger adults, whereas for tenacity the reverse pattern emerged. This presumable shift from mainly assimilative to mainly accommodative coping was suggested to help the aging individual to maintain high well-being and a sense of personal control despite decreasing abilities and opportunities to redefine life (Brandtstädter & Renner, 1990).

Another group of researchers (Wrosch, Scheier, Miller, Schulz, & Carver, 2003) proposed two independent capacities in the context of disengagement that they in combination denoted as *goal adjustment capacities*. One capacity refers to being able to disengage from unattainable goals, and the other, equally important capacity refers to being able to reengage in new, more feasible goals. Wrosch et al. developed a 10 items comprising Goal Adjustment Scale (GAS) to assess the ease to withdraw behavioral efforts and psychological commitment across a variety of goal domains (e.g., "It's easy for me to reduce my effort toward the goal", "It's easy for me to stop thinking about the goal and let it go"), as well as individuals' capacity to identify, reengage with, and start pursuing new goals (e.g., "I start working on other new goals"), when having to stop pursuing an important goal. Self-reported goal adjustment capacities emerged to be moderately stable over time (Dunne, Wrosch, & Miller, 2011) and the two subscales only weakly correlated, in line with assumptions (Wrosch et al., 2013).

Pointing to interindividual variation, Wrosch and colleagues' work shows that persons with higher goal adjustment capacities are able to maintain higher well-being and health when confronted with an unattainable goal, controlling for other personality variables like the Big Five, dispositional optimism, and dispositional assimilation and accommodation (Wrosch et al., 2013). In line with the assumption that disengagement from an unattainable goal prevents individuals from the negative implications of repeated failure, high disengagement capacities, across samples and contexts, mainly predicted lifts in impaired well-being, like reductions in depressive symptoms, while they contributed less to positive aspects of well-being, like purpose and positive affect (Wrosch, Amir, & Miller, 2011; Wrosch & Miller, 2009). These positive aspects of well-being were theorized to be mainly predicted by reengagement capacities. Indeed, goal reengagement capacities were less suited to predict relief from subjective ill-being, but were in several studies associated with positive aspects of well-being (Wrosch & Miller, 2009; Wrosch & Sabiston, 2013; Wrosch et al., 2003).

Goal adjustment capacities not only predict well-being, but also physical health. Wrosch et al. (2013) assumed that higher subjective well-being as a result of goal adjustment capacities translates into physiological functioning and vulnerability for disease, in short, physical health; also direct paths of goal adjustment capacities on physical health were assumed. Empirical studies found that higher goal disengagement capacities were associated with fewer health problems, a more normative diurnal pattern of cortisol secretion, and better sleep (Wrosch, Miller, Scheier, & Pontet, 2007). Adolescents with lower dispositional disengagement capacities experienced an increase in C-reactive protein concentrations over time, a marker of systemic inflammation known to contribute to several medical conditions (Miller & Wrosch, 2007). First empirical evidence suggests that the relationship between goal disengagement capacities and health can be mediated by subjective well-being. Goal reengagement capacities did not predict physical health to the same extent (Wrosch et al., 2007; Wrosch et al., 2013).

Taken together, research by Wrosch and colleagues illustrates that people differ in their ability to let go of unattainable goals and their ability to identify new goals; capacities that cannot likewise be explained by other dispositions. If people possess these capacities, they are able to maintain well-being and health even in critical life situations, in which they are confronted with the necessity to deal with the loss of a central and self-defining goal. To note, the concept of goal adjustment capacities takes as starting point the situation in which a valued goal has become unattainable (due to age-related changes, altered life circumstances, or lack of skills). It describes individuals' *adjustment* in case of an externally imposed, clear

necessity to give up a goal, and does so from a perspective of interindividual differences. Much less is known about the *process* of coming to release a valued goal, although first evidence suggests that goal adjustment capacities might predict the use of specific coping strategies (Wrosch et al., 2011).

Whereas some situations in life certainly imply the clarity that a goal has to be abandoned, for instance, when people have to deal with the death of or separation from a spouse, in many other instances, the crucial question is to judge whether a goal is unattainable or just hard to reach; even though the difference may seem minimal, the implications that result from the two conclusions could not be more different (disengagement vs. increased efforts). This ambiguity has only received minimal attention in empirical research, and not much is known about how people come from high hopes in goal striving to the point where they have realized that they have to abandon their goal. Even though the temporal dynamics of disengagement on the level of specific personal goals are empirically not well understood (Brandstätter & Schüler, 2013), some theoretical assumptions exist. These will be reviewed in the following section.

The process of goal disengagement

Theoretical considerations about the process of goal disengagement were formulated by Eric Klinger. In his view, "behavior and experience are organized around the enjoyment and pursuit of incentives" (Klinger, 1975, p. 1), which, by the act of committing to them, become to goals. Due to the life-organizing properties of *current concerns*, the representations that individuals hold about their goals, Klinger understood the process of ending a current concern as self-involving and troublesome.

With the *incentive-disengagement cycle,* Klinger (1975) proposed an orderly sequence of four phases, which he considered continuous rather than discrete. He argued that when a person faces obstacles in goal striving, he or she will, at first, try to remove them by bringing up greater force. In this initial phase of *invigoration*, the blocked incentive appears even more attractive, whereas alternative incentives are seen as less so. This may result in a "loss of 'perspective'" (p. 9) and an over-involvement in the obstructed goal. Frustration comes up when invigorated efforts do not lead to the hoped-for success (*aggression*). After some time, frustration gives way to *depression*, which in intensity may reach from mild displeasure to despair. Despite its aversiveness, depression is considered adaptive in its function to decrease

incentive value, needed for dissolving the blocked goal. When life circumstances offer new incentives, in the phase of *recovery*, depression lifts and the person readjusts (Klinger, 1975).

Klinger's model is of high theoretical value and continues to influence resarchers' understanding of goal disengagement. Its major contribution is to sketch goal disengagement as a lengthy, emotional process, which, for some time, turns an individual's world upside down (Brandstätter & Herrmann, in press). Due to the process perspective and the conceptualization of disengagement on the level of concrete goals, the model puts several phenomena in chronology (e.g., the mobilization of efforts and reactive enhancement of an obstructed goal; frustration-depression sequence). It offers a new perspective on depression, which is not only regarded as normal response, but, due to its drive- and incentive-reducing function, as *necessary* for disengagement to occur. Therewith, Klinger highlights in one model the evolutionary benefit of trying harder, and the adaptive value of a stopping mechanism that prevents the organism's exhaustion while being aversive enough to be parsimonious in use.

In light of the attention that has been devoted to Klinger's model, it is astonishing how rarely its assumptions have been subjected to an empirical test (but see Klinger, Barta, & Kemble, 1974). Wrosch and Miller (2009) tested Klinger's idea of the adaptive value of depression and found that adolescent girls with higher baseline levels of depressive symptoms over time improved their goal disengagement capacities to a stronger extent. This improved ability to disengage from goals was linked to a reduction in depressive symptomatology. Despite insightful, an investigation of the model assumptions on the level of concrete goals is still missing (Brandstätter & Herrmann, in press).

Another theory with assumptions about goal disengagement is the *motivational theory of life-span development* (Heckhausen, Wrosch, & Schulz, 2010). It conceives individual agency as organized around a series of developmental goals and contends that, across the life span, opportunities for the realization of self-developmental goals (e.g., graduating from school, having children, building a career) emerge, increase, peak, and decline. Individuals are thought to use these action cycles of improving and decreasing opportunity structures to shape their life course and personal development. Most pertinent to the question of how individuals disengage from concrete goals, for the pursuit of each developmental goal, a timeline of motivational and volitional processes is sketched, which uses as its basis the *Rubicon model of action phases* (Gollwitzer, 1990; Gollwitzer, 2012; Heckhausen & Gollwitzer, 1987).

The Rubicon model segments a course of action into four consecutive phases, each with a specific task to be accomplished. In a first motivational phase, individuals select out of various desires the ones that seem, given their perceived desirability and attainability, worth striving for (*pre-decision*). With setting a goal, individuals cross the "Rubicon" and enter a volitional phase directed at the identification and planning of action steps (*pre-action*). These are implemented in the subsequent *actional* phase. In the *post-actional*, again motivational phase, individuals evaluate if the goal has been reached or whether further goal striving is required (Gollwitzer, 2012).

The *action phase model of developmental regulation* (Heckhausen, 1999; Heckhausen, Wrosch, & Fleeson, 2001) extends the Rubicon model by a second discrete transition, the *deadline*. The deadline constitutes the point at which opportunities for goal realization disappear or sharply decline. This radical shift in goal attainability is anticipated by the individual and influences his or her striving. When the deadline approaches and a goal has not been reached, the prospect of decreasing opportunities leads to increased goal engagement.

When goal striving becomes "urgent", control processes that were applied previously are intensified. *Selective primary control* strategies subsume active attempts to reach the goal by investing time, skills, and effort; *selective secondary control* include motivational processes that support primary control striving (e.g., positive illusions about one's competencies, enhanced valuation of the chosen and devaluation of non-chosen goals). Individuals may additionally employ *compensatory primary control*, which entails seeking support and advice from others, using technical aids, or unusual means to goal attainment.

Individuals' behavior is thought to change drastically, once a deadline has been passed without success. Then, urgent goal striving should immediately stop and preference be given to disengagement. This is achieved by *compensatory secondary control*, self-protective strategies that are intentionally employed to ward off negative implications of goal failure. Such strategies include downgrading goal value, downward social comparison, and positive reappraisals. According to Heckhausen et al. (2010, p. 41), "It is active disengagement in terms of withdrawal of effort and breaking of commitment that achieves this rapid and radical shift".

While the model inspires a perspective on goal pursuit that acknowledges that even well-intended striving does not necessarily lead to success, and emphasizes the need to use control processes under consideration of changing opportunities, what seems questionable is to what extent deadlines can be thought of as discrete. Even in the studied goal contexts (e.g., a child wish that is bound to the age-limits of fertility), it is not so clear whether a *discrete*

deadline exists; even if so, it will be an individual deadline rather than a universally valid one, and where it lies will often reside in the unknown. Of course, people may anticipate a deadline, and the theory has a good point in acknowledging this. However, the question whether one has already passed the deadline or sufficient goal attainability is still given seems to be the crucial question when dealing with a blocked goal. Questioning the theory's assumption of a clear deadline, it becomes debatable how sudden people's switch to disengagement can be, and how streamlined their withdrawal of effort and commitment.

The assumption of conflict at the transition between goal engagement and disengagement is inherent in the *dual process model of assimilative and accommodative coping* (Brandtstädter & Rothermund, 2002). As outlined before, the model distinguishes two classes of coping processes that reduce discrepancies between factual and desired outcomes in opposed, yet, complementary ways. For assimilation and accommodation, some chronology has been proposed: Assimilative processes are thought to dominate as long as a goal discrepancy can be altered by preventive or corrective action. When assmilative efforts "reach a zone of diminishing returns" (Brandtstädter & Rothermund, 2002, p. 135), that is, become ineffective, the balance tips toward accommodative processes. A critical situation arises when assimilative processes are run with maximal strain yet low return, and accommodative processes come into play. The simultaneous activation of both processes may produce stressful conflict and a "wavering between holding on and letting go" (Brandtstädter & Rothermund, 2002, p. 123). Particularly when important goals are concerned, difficulty in switching from the assimilative to the accommodative mode is manifested in depressive symptoms; depression, in turn, helps to deconstrue the cognitive orientations that maintain assimilation. Thus, depression is manifestation of conflict and promoter of accommodation alike (Brandtstädter & Rothermund, 2002).

In contrast to Heckhausen et al. (2010), Brandtstädter and Rothermund (2002) assert that accommodative processes cannot be employed strategically, but are beyond intentional control. In content, they equal what is comprised in the concept of secondary compensatory control (Heckhausen et al., 2010). By promoting the devaluation of the blocked goal, a reappraisal of the initially aversive situation, and the identification of alternative goals, accommodation permits a sense of control in situations in which control is actually missing. Consequently, Brandtstädter and Rothermund (2002) consider the relative neglect of accommodative processes in empirical research and the frequently made reference to failure and resignation as unjustified and misleading.

Subsuming the three theories, what can be concluded about the disengagement process? First, the reviewed theories share the assumption that obstacles in goal striving or the anticipated end of opportunities motivate an individual to bring up greater force. Second, they jointly predict that when a person realizes that intensified efforts remains futile or a deadline has been passed, he/she will disengage. Third, in two of the three models, depression is assigned an important function in dissolving commitment from barren goals. Related to this, fourth, disengagement is thought to not only require a withdrawal of effort, but also relinquishment of commitment to the goal. Fifth, even though researchers disagree with respect to whether disengagement is self-regulatory act or unintentional change beyond individuals' control, the processes assumed to lead to disengagement are basically the same.

In light of this research, two points merit attention. The first is that even though all models include some turning point between persistence and disengagement, instigated by the realization that outcome expectancies are too unfavorable, this transition either seems unrealistically abrupt, or underlying processes are not well specified. This is unfortunate given that the challenge to achieve an adequate balance between the contrasting options of holding on and letting go has been denoted as key to optimal living in philosophy and contemporary psychology (Brandtstädter & Renner, 1990; Carver & Scheier, 2005; Emmons, 2003; Janoff-Bulman & Brickman, 1982; Lench & Levine, 2008; Wrosch et al., 2013). Researchers have for instance referred to it as "goal dilemma" (Jostmann & Koole, 2009, p. 338) or "stability-flexibility dilemma" (Brandtstädter & Rothermund, 2002, p.120), pointing out that people often have a hard time deciding whether they should keep up the struggle or let it go. In light of the complexity and relevance of personal goals, the assumption of sudden and easy turnovers from persistence to disengagement seems unlikely.

The second point refers to the current state of empirical verification. Whereas only few studies have tested Klinger's assumptions (Brandstätter & Herrmann, in press), the other two approaches were mostly investigated from a life-span perspective, often by comparing individuals of different age. To test the predictions of *motivational theory of life-span development*, researchers have for instance used quasi-experimental designs, comparing individuals before a deadline with individuals who had clearly passed the deadline. A theory-consistent finding was that individuals before a deadline used more control strategies related to (urgent) goal striving, whereas individuals who had passed the deadline used control strategies to facilitate disengagement; a phase-congruent use of control strategies predicted higher well-being (Heckhausen et al., 2001; Wrosch & Heckhausen, 1999; Wrosch, Heckhausen, & Lachman, 2000). Predictions of the *dual process model of assimilative and*

accommodative coping were often tested at the transition to late adulthood, where resources needed for assimilation decline, and individuals need to shift to accommodation to maintain high levels of well-being (Brandtstädter & Greve, 1994; Brandtstädter & Rothermund, 1994). Thus, even though the models' predictions would be applicable to the non-developmental context (Heckhausen et al., 2010), the affective, cognitive, and behavioral processes involved in the disengagement from specific goals have not been systematically analyzed (Brandstätter & Herrmann, in press). This is where the concept of action crisis (Brandstätter, 2003) steps in.

The action crisis

Contrary to previous models on goal disengagement (Heckhausen et al., 2010; Klinger, 1975), the action crisis puts the experience of conflict between the antagonistic forces to persist and disengage into the explicit focus of attention. It marks the time when people are torn between holding on to and letting go of a personal goal after a series of obstacles in goal striving has been experienced and/or the goal has lost part of its appeal (Brandstätter, 2003; Brandstätter & Schüler, 2013). The intensity of action crisis is measured with respect to idiographic personal goals and operationalized by several cognitive and behavioral characteristics that have, in an unpublished pilot study, been identified to accompany this kind of intra-goal conflict (i.e., doubt, disengagement impulses, recurrent setbacks, implemental disorientation, rumination, and procrastination). Despite the seemingly diversity of its experiential features, the Action Crisis Scale (Brandstätter & Schüler, 2013), with which the intensity of action crisis is measured, is across studies of high internal consistency (Cronbach's α typically above .75), strengthening the view of a coherent syndrome that may come up in obstructed goal striving.

Given that in the action crisis, the option of goal abandonment has come into individuals' focus, it can be considered as part of a disengagement process that has just begun. This does not mean, however, that an action crisis inevitably leads to full disengagement, defined by the behavioral and emotional withdrawal from the goal (Herrmann & Brandstätter, 2013). While a recent finding shows that goal abandonment is in many cases preceded by an action crisis, and more severe action crises predict goal abandonment with shorter timely distance (Herrmann & Brandstätter, 2015), the action crisis may also be overcome with goal striving gaining new momentum. This may be the case when the individual rediscovers value in the goal, identifies new ways to goal attainment, or when conditions for goal attainment

ameliorate (Brandstätter & Herrmann, in press). This outcome-openness supports the conceptualization of the action crisis as phase of conflict.

Fully in congruence with Klinger's model, the action crisis analytic approach views goal disengagement as a process rather than a binary event that starts long before individuals give up on their goal. By repeatedly assessing individuals' experience with respect to a specific goal, the temporal dynamics of goal disengagement on various levels of experience can be studied (Brandstätter & Schüler, 2013).

Affective, cognitive, and behavioral correlates

Previous studies have investigated the affective, cognitive and behavioral correlates of an action crisis. Conforming to previous accounts of goal disengagement as emotional and troublesome process (Brandtstädter & Rothermund, 2002; Carver & Scheier, 2005; Klinger, 1975; Wrosch et al., 2003), longitudinal studies have linked the action crisis to the experience of negative affect and reductions in psychological and physical well-being over time. Specifically, individuals with more severe action crisis reported a decrease in life satisfaction, an increase in psychosomatic symptoms, and an increase in sleeping disorders (Brandstätter, Herrmann, & Schüler, 2013).

The action crisis was also found to instigate change on the cognitive level (Brandstätter & Schüler, 2013). Mindset theory of action phases (Gollwitzer, 1990; Gollwitzer, 2012; Heckhausen & Gollwitzer, 1987) holds that each action phase is associated with a distinct cognitive orientation (i.e., *mindset*) functional for the accomplishment of phase-specific tasks. Goal realization is supported by an *implemental* mindset, narrowing individuals' focus on goal implementation and biasing information processing in favor of the goal. Goal setting is supported by a *deliberative* mindset characterized by impartial information processing and openmindedness (Gollwitzer, 1990, 2012). Building on the Rubicon model, Brandstätter and Schüler (2013) expected that the action crisis would expel individuals from their implemental mindset. They found that when an action crisis was experimentally induced or measured with respect to a personal goal, cost-benefit-thinking as a feature of the deliberative mindset strongly increased. An incidental learning paradigm further revealed that the preferential processing of implementation- over deliberation-related material was attenuated in an action crisis, compared to unobstructed goal striving. Brandstätter and Schüler (2013) concluded that the action crisis is associated with a distinct cognitive orientation, in which features of the prevalent implemental mindset are mixed with features of

a resurging deliberative mindset. This finding has been validated on the neural level of analysis (Herrmann, Baur, Brandstätter, Hänggi, & Jäncke, 2014).

Starting from the mindset-shift, Brandstätter and colleagues (2013) reasoned that an action crisis restores pre-decisional impartiality also with respect to goal appraisals (Beckmann & Gollwitzer, 1987; Gagné & Lydon, 2001; Gollwitzer & Kinney, 1989; Harmon-Jones & Harmon-Jones, 2002; Taylor & Gollwitzer, 1995). Indeed, higher levels of action crisis in personal goals predicted a subsequent decrease in goal desirability and attainability over a study period of 14 weeks (Brandstätter et al., 2013). This breakup of the implemental bias was regarded as sign of accommodation (Brandtstädter & Rothermund, 2002) and necessary requirement for disengagement processes to seep in (Brandstätter et al., 2013).

At the same time, the concern has been expressed that the action crisis impedes goal striving and leads to reduced goal-related performance, given that the opposing tasks of efficient goal implementation and impartial deliberation now coexist (Herrmann et al., 2014; Herrmann & Brandstätter, 2015). Indeed, individuals who experienced higher levels of action crisis with regard to their goal to run a marathon achieved a slower running time in the race two weeks later, when potentially confounding variables were controlled. A steeper increase in saliva cortisol over the course of the run, which may indicate increased stress, partly mediated these performance impairments (Brandstätter et al., 2013). In a similar vein, students with higher levels of action crisis in their studies reported to have collected a lower number of ECTS credits by end of the first academic year (Herrmann & Brandstätter, 2015). While these studies clearly point to impaired performance in consequence of the action crisis, they cannot fully thwart the alternative explanation that individuals with more severe action crises were less prepared to meet the demands posed by their goal, *therefore* experienced an action crisis, and showed lower performance later on. A further investigation of the predictive effects of an action crisis on goal-related performance has, thus, been expressed as a need for further research (Brandstätter & Herrmann, in press). This research conforms to this expressed need.

Risk and protective factors for experiencing an action crisis

Apart from the investigation of affective, cognitive, and behavioral correlates of an action crisis, research has started to address factors involved in its development and resolution. Factors related to the goal and the person will be described in the following.

Goal-related factors. Action crises are thought to develop when obstacles in goal striving have accumulated and/or the goal has lost part of its appeal (Brandstätter & Schüler, 2013). These instances can be subsumed under the expectancy-value-theoretical notion (Atkinson, 1964; Feather, 1982; Vroom, 1964) of limited outcome expectancy (i.e., goal attainability) and/or limited goal value (i.e., goal desirability). Note that the action crisis analytic approach, contrary to previous approaches to goal disengagement, acknowledges both insufficient goal attainability *and* insufficient goal desirability as legitimate reason to question a goal. Empirically, the predictive effects of the goal's motivational features on the experience of action crisis are untested. The present research aims to close this gap.

Recently, the autonomous motivation to pursue a goal was studied as protective factor for the development of action crises (Holding, Hope, Harvey, Jetten, & Koestner, 2016). Some goals are rather externally controlled, for instance, when a person complies with an obligation expressed by other people, whereas other goals are pursued for more autonomous reasons, when they reflect the person's true values and interests. Goal self-concordance as the degree to which individuals' motivation to pursue a goal is autonomous rather than controlled has been linked to higher goal progress and well-being (Sheldon & Elliot, 1999; Sheldon et al., 2004). When studying autonomous and controlled motivation in the context of the action crisis, Holding et al. (2016) found that autonomous motivation was associated with lower action crisis severity measured several weeks later, controlling for dispositional factors like action- versus state-orientation, neuroticism, and goal-adjustment capacities. Controlled motivation was associated with more severe action crises (Holding et al., 2016). A similar pattern was earlier reported for goal ambivalence (Koletzko, Herrmann, & Brandstätter, 2015), which can be assumed to share experiential features with the action crisis. These findings suggest that pursuing self-concordant goals may be a protective factor that shields individuals from having an action crisis (Holding et al., 2016).

Person-related factors. Herrmann and Brandstätter (2013) followed a similar line of reasoning when they examined action (vs. state) orientation as a predictor residing within the person. Action orientation describes individuals' dispositional ability to regulate positive and negative affect, which is, according to *theory of personality-systems interactions* (Kuhl, 2001) needed to flexibly alternate between effortful *self-control* and intuitive *self-maintenance* (i.e., self-regulation) as the two complementary modes of volitional action control. Consistent with findings that the ability to regulate basic affect supports self-congruent goal setting (Kuhl & Kazén, 1994), individuals with higher action orientation were less prone to develop an action crisis over the studied time period of 14 weeks (*shielding effect*). In accordance with the view

that successful affect regulation fosters effective goal striving and the overcoming of obstacles (Diefendorff et al., 1998; Fuhrmann & Kuhl, 1998), the study further revealed that among individuals who already experienced an action crisis, high dispositional action orientation was associated with its faster resolution (*resolution effect*). Cross-sectionally, these effects were mediated by increased self-concordance on the level of concrete goals (Herrmann & Brandstätter, 2013), what nicely links the investigation of person-related and goal-related factors. Although research has started to identify factors that may shield individuals from developing an action crisis, not much is known about people may overcome an action crisis once experiencing it. To investigate the effectiveness of one specific strategy is an announced objective of this research.

The present research

The action crisis offers an excellent theoretical and methodological framework to address questions that have been raised in the context of goal disengagement. Unlike previous investigations that were mostly taken from an interindividual difference perspective (Brandtstädter & Renner, 1990; Wrosch et al., 2003), the action crisis account to goal disengagement implies the possibility to investigate temporal dynamics by repeated measurement (Brandstätter & Herrmann, in press; Herrmann & Brandstätter, 2013). Apart from the process perspective, also people's immediate experience and behavior in a specific "goal dilemma" is open to investigation. In this thesis, I used both approaches: Part I and Part II address longer-term changes in subjective goal appraisals and goal-related performance in relation to the action crisis, with potential contributions to the understanding of the goal disengagement process. Part III and Part IV focus on the immediate experience of the action crisis as arguably self-threatening intrapsychic conflict, with potential contributions how the conflict between further goal pursuit and disengagement might be resolved.

Part I: The dynamic interplay between the experience of action crisis and appraisals of goal desirability and attainability

Part I of this research builds upon previous investigations of the action crisis and extends their findings. Brandstätter et al.'s (2013) investigation had revealed that the action crisis, arguably due to the mindset-shift, predicts a reappraisal of the motivational features of the goal, a change that was regarded as necessary requirement for disengagement to occur (Brandstätter et al., 2013). In addition, Brandstätter and Herrmann (in press) noted, in line with expectancy-

value models of motivation (Atkinson, 1964; Feather, 1982; Vroom, 1964) and theoretical assumptions in the field of goal disengagement (Carver & Scheier, 2005; Wrosch et al., 2003), that an action crisis develops as a result of a loss in subjective goal attainability and/or desirability. Empirically, this latter assumption remained untested. Combining these two assumptions, Part I investigates a dynamic interplay between the action crisis and individuals' subjective goal appraisals in the disengagement process from a high-level personal goal (i.e., the goal to complete a university degree). The main proposition is that the action crisis not only predicts the successive devaluation of the goal's attainability and desirability (Brandstätter et al., 2013), but, in turn, low subjective goal attainability and desirability contribute to an increase in action crisis over time. When analyzed among individuals who ultimately abandon their goal (i.e., drop out of their studies), this pattern should be manifested in continuously increasing levels of action crisis and steadily decreasing appraisals of goal attainability and desirability until the time when individuals finally abandon their goal. Related to this, a second aim of Part I is to test whether devaluing a goal's desirability might help to maintain life satisfaction when goal disengagement is considered or actually imminent; an idea which is inherent in several theoretical approaches outlined in the introduction (Brandtstädter & Rothermund, 2002; Heckhausen et al., 2010; Klinger, 1975; Wrosch et al., 2003).

Part II: The effects of an action crisis on goal-related and goal-unrelated performance

While Part I addresses the processes instigated by the action crisis on the level of individuals' subjective goal appraisals, Part II focuses on the question how the action crisis relates to objective outcomes of goal pursuit. In light of existing evidence that the action crisis is linked to impairments in goal-related performance (Brandstätter et al., 2013; Herrmann & Brandstätter, 2015), a further analysis of performance effects in consequence of the action crisis has been advocated (Brandstätter & Herrmann, in press). To test the hypothesis that the action crisis is detrimental to performance, two studies with complementary methodological approaches are presented. In a first longitudinal study, students with higher levels of action crisis in their university degree, measured at the beginning of the term, are expected to achieve a lower academic performance by the end of that term. Methodologically extending a previous investigation (Hermann & Brandstätter, 2015), academic performance (i.e., GPA and number of ECTS credits obtained) is determined on the basis of the university's official records, and prior-term academic performance is statistically controlled. As a longitudinal study offers insights about processes in real-life goal striving, but does not allow conclusions

about causality, Study 2 is designed to conduct a causal test. It additionally diverges from Study 1 in that it studies performance impairments in a task that is goal-unrelated in content. If the experience of action crisis, as expected, consumes relevant cognitive resources, performance impairments should even be observable on unrelated tasks executed in temporal proximity. Supporting evidence would point to the broader relevance of an action crisis within an individuals' goal system.

Part III: The action crisis as a threat to the self

Personal goals are usually seen as defining individuals' identity and self-conceptions (Brunstein & Gollwitzer, 1996; Emmons, 2003). Accordingly, researchers in the field of goal disengagement have asserted that giving up a goal can shake a person's self to the core (Wrosch et al., 2003; Klinger, 1975; Carver & Scheier, 2005). The implications of goal failure for subjective self-integrity are assumed to be that far-reaching that people sometimes cling to a futile course of action despite financial or emotional costs (Brockner, 1992). Based on these assumptions, Part III of this research scrutinizes in one correlational and one experimental study the hypothesis that experiencing an action crisis in a personal goal is self-threatening. Subsuming the experiential effects of the action crisis under the theoretical framework of a threatened self may promote a better understanding of this critical phase in goal striving. From other research traditions (Sherman & Cohen, 2006), much is known about people respond to threat, and this knowledge might be used to make predictions about individuals' behavior in an action crisis. In particular, it might give an indication what people in an action crisis may benefit from (i.e., strategies that alleviate self-threat). Such an approach was, for the first time, taken in Part IV.

Part IV: Investigating a potential intervention for resolving the action crisis

Researchers have pointed to the significance of the development of interventions for the action crisis (Brandstätter & Herrmann, in press). Despite its assumed aversiveness and self-threatening nature (see Part III), shielding an individual from its experience would not be the right conclusion, as it would ignore the benefits of disengagement from goals that are not worthwhile or out of reach. Therefore, more than preventing action crises, interventions should be targeted at their optimal resolution. As knowing when to hold and when to fold is key for optimal living (Lench & Levine, 2008; Wrosch et al., 2003), people might benefit from a strategy that promotes a decision that incorporates relevant information, while ignoring

factors that are secondary for ultimate decision quality (e.g., self-justification or face-saving concerns). Drawing from expectancy-value models of motivation (Feather, 1992), factors immediately relevant to the decision whether to further pursue a goal are its attainability and desirability.

As self-threat is assumed to distort decisions about persistence and disengagement (Brockner, 1992; Zhang & Baumeister, 2006) and has been associated with restricted information processing (Cohen & Sherman, 2014), a strategy that alleviates self-threat might be of use in the action crisis. Part IV tests self-affirmation (Steele, 1988) as such a strategy. A large body of research shows that in threatening situations, short affirmations of overall self-adequacy can prevent defensive responses (for a review, see Cohen & Sherman, 2014). When affirmed, threatening information can be approached and processed more thoroughly, with implications for the conclusions derived from it (Klein, Harris, Ferrer, & Zajac, 2011). Moreover, affirmed individuals were found to more readily internalize the informative value of self-relevant experiences, like success and failure, and act accordingly (Vohs, Park, & Schmeichel, 2013). Based on these findings, four experimental studies are presented that test whether, in an action crisis, the affirmation of a goal-unrelated value helps people to base their preference for further goal pursuit versus disengagement on the subjective desirability and attainability of their goal.

PART I

The Process of Disengagement From Personal Goals

Reciprocal Influences Between the Experience of Action Crisis and Appraisals of Goal Desirability and Attainability

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Abstract

To date is it not well understood how individuals disengage from goals. A recent approach suggests that disengagement is often preceded by an action crisis, a motivational conflict in which the individual is torn between holding on to and letting go of a personal goal. We postulate that a dynamic interplay between the experience of action crisis and appraisals of goal desirability and attainability shapes the disengagement process from personal goals. In two longitudinal studies (N = 364), an action crisis in the goal to complete a university degree predicted devaluations of its desirability and attainability, and reversely, low goal attainability (but not desirability) predicted an increase in action crisis. Moreover, studies provided first evidence that devaluing goal desirability might be functional for well-being in an action crisis. Studies strengthen the view that disengagement is shaped by reciprocal processes between the experience of action crisis and changes in goal appraisal.

Introduction

Imagine a student who started his medical degree with the best intentions to become a physician, but some semesters and failed exams later drops out of university, convinced that medicine is not for him. Or picture two newlyweds, firmly committed to stay together in good times as in bad, who, after some stormy years, conclude that the best thing they can do is part ways. How did they come to the conclusion to let go of a previously valued goal and what does the process of disengagement look like? These are the questions the present research aims to address.

Goal disengagement as an essential capacity in life

There are endless examples of personal goals individuals pursue in their lives; projects that were carefully weighed before starting them; goals that, once set, define individuals' identity and guide their everyday life (Emmons, 2003). Despite good intentions, not all of them can be achieved. In the last two decades, psychological research has come to acknowledge that aside from the importance to persist in the face of obstacles, turning away from unfruitful endeavors is an adaptive response at times (Brandstätter, 2003; Brandtstädter & Rothermund, 2002; Wrosch et al., 2003). It is when strivings have become too costly or expectations of success too low that goal disengagement frees resources and relieves psychological distress that would arise from repeated failure when sticking to the goal (Wrosch et al., 2003). Although individuals were shown to differ in their goal adjustment capacities, with higher capacities predicting better well-being and health (Wrosch et al., 2013), the mechanisms explaining *how* individuals disengage are largely unknown, the process of disengagement not well understood.

Yet, there are theoretical considerations, formulated 40 years ago, that shape today's scientific discourse about the disengagement from personal goals. Klinger (1977) conceived disengagement as a lengthy and difficult process comparable with a "psychic earthquake that sends shudders and rumbles through a person's life" (p. 137). The four-phase sequence of events, known as the *incentive-disengagement cycle* (Klinger, 1975), starts with hardly surmountable obstacles in goal striving, which the individual confronts with an increase in commitment and the devaluation of alternative goals *(invigoration)*. If efforts to overcome obstacles go astray, the individual enters a phase of *aggression* characterized by signs of frustration. At some point, the person begins to give up and falls into a state of desperate avolition. This phase of *depression* is highly aversive but comes with the advantage of

loosening most commitments, inclusive the commitment to the blocked goal. Finally, the individual enters a phase of *recovery*, in which he or she rediscovers interest in incentives and may end the cycle by committing to a new goal (Klinger, 1975). Although insightful and much cited, an empirical test of the model is lacking. Only recently have researchers started to test Klinger's assumptions (Wrosch & Miller, 2009) and investigate the disengagement process on the level of concrete goals.

Resuming the process perspective on goal disengagement: The action crisis

A recent approach favoring a process perspective on goal disengagement comes with research on the action crisis (Brandstätter, 2003; Brandstätter & Schüler, 2013). Even though not conceptualized as an element of Klinger's model, the action crisis may be located at the point when invigorated attempts to overcome obstacles have not led to the hoped-for success, and frustration about it has come up. Due to the notion of distinct phases, in the incentive-disengagement cycle the transition between intensification of efforts and downswing into depression seems abrupt. Research on the action crisis adds to the understanding of the disengagement process by pointing to the experience of conflict between the opposing forces of holding on to and letting go of a personal goal and by conceptualizing the transitional phase between persistence and withdrawal, in which individuals, while still being concerned with goal implementation, feel increasing goal-related doubt.

The intensity of action crisis with regard to specific goals is operationalized by individuals' reports of several facets constitutive of conflict. Higher levels of action crisis are inferred when people, with respect to a goal to which they still feel committed, experience recurring doubts, repeated setbacks, implemental disorientation, goal related rumination, disengagement impulses, and when they procrastinate (Brandstätter et al., 2013; Brandstätter & Schüler, 2013). Although an action crisis does not have to result in the abandonment of the goal, but may likewise be overcome by a renewal of commitment (e.g., if people identify new means to goal attainment), recent findings show that it usually precedes goal termination (Herrmann & Brandstätter, 2015). Consistent with Klinger's (1975) reasoning, goal disengagement, in this approach, is regarded as a gradual process rather than a discrete event, which starts considerably before individuals give up on their goals (Brandstätter et al., 2013; Brandstätter & Schüler, 2013).

Previous research has addressed the affective, behavioral, and physiological correlates of an action crisis. In line with its understanding as intrapsychic conflict, it was found to concurrently and longitudinally predict impairments in psychological and physical well-being

(Brandstätter et al., 2013). First evidence further suggests that it compromises goal-related performance. Individuals who, in the preparation of a marathon, experienced higher levels of action crisis performed worse in the marathon two weeks later, controlling for experience, amount of training, age, and body mass index. This effect was partly mediated by steeper increases in saliva cortisol, a physiological indicator of stress, measured repeatedly during the run (Brandstätter et al., 2013).

As experimental and longitudinal studies have revealed, an action crisis also affects individuals' goal-related cognitive orientation, that is, their *mindset* (Brandstätter & Schüler, 2013). Mindset theory of action phases (Gollwitzer, 1990, 2012) holds that different phases in goal striving evoke mindsets functional for the accomplishment of phase-specific tasks. The phase of goal striving promotes an *implemental* mindset, which colors individuals' outlook in favor of the goal and contributes to persistence and goal attainment (Armor & Taylor, 2003; Brandstätter & Frank, 2002). In an action crisis, this firm orientation towards goal implementation is attenuated, while *deliberative* cost-benefit thinking resurges. This change in cognitive orientation, which has been denoted as mindset-shift (Brandstätter & Schüler, 2013), is regarded as an important requirement for disengagement processes to seep in (Brandstätter et al., 2013).

Reciprocal influences between the experience of action crisis and appraisals of goal desirability and attainability

Based on the mindset-shift, Brandstätter and colleagues (2013) expected that an action crisis entails changes in how individuals evaluate their goal in terms of its desirability (i.e., the value attributed to the goal) and its attainability (i.e., the expectancy that the intended outcome can be attained). They built this prediction on studies showing that the deliberative mindset, to support well-balanced goal setting, fosters an impartial evaluation of goal desirability and attainability (Beckmann & Gollwitzer, 1987), whereas the implemental mindset, to immunize individuals against undue termination in face of obstacles, is characterized by an enhancement of the goal's features (Gollwitzer & Kinney, 1989; Harmon-Jones & Harmon-Jones, 2002). With the resurgence of a deliberative mindset in the action crisis, Brandstätter et al. (2013) concluded that individuals would come to see the desirability and attainability of their goal more skeptically. Indeed, higher levels of action crisis in personal goals predicted devaluations of goal desirability and attainability over the period of 14 weeks. This was attributed to a reduction of the implemental bias in consequence of the

mindset-shift and accommodative processes facilitating disengagement (Brandstätter et al., 2013).

While this finding shows that appraisals of goal desirability and attainability are updated to match and reflect the current status in goal striving, the reverse influence of goal desirability and attainability on the experience of action crisis remains unclear. On theoretical grounds, there is reason to assume that this influence exists. Expectancy-value models (Atkinson, 1964; Feather, 1982; Vroom, 1964) hold that the motivation to pursue a goal is defined by its value as well as expectancy that it can be attained. These features do not solely shape motivation before a goal is set; when people confront difficulties in goal striving, they periodically step outside the behavioral stream to reassess the likelihood of success. If the assessment turns out unfavorably, the result is an impetus to cease further effort, and potentially disengage from the goal itself (Carver & Scheier, 1998). Jostmann and Koole (2009) noted:

> If the goal is highly valuable, people are more inclined to hang on to it than when the goal is less valuable. …. When people expect that they still have the capacity to attain the goal, they are more likely to persist compared to when they consider their capacities as insufficient. (p.338)

Thus, when people confront obstacles in goal striving or the goal loses its appeal, disengagement comes into question.

Yet, not every impetus to disengage is translated into action (Carver & Scheier, 1998). There are things that tie individuals to their goals, in the form of previous investments (Arkes & Blumer, 1985) or the implications of the goal for identity and daily routines (Emmons, 2003). Hence, low value or bleak outcome expectancies might rather evoke motivational conflict (i.e., an action crisis). When drawbacks prevail or goal striving is aggravated as a result of the action crisis (Brandstätter et al., 2013), this should add to individuals' account of adversity experienced, further dampen expectations of success, and predict increased levels of action crisis.

Based on these considerations, we assumed that not only does an action crisis predict a devaluation of the goal's desirability and attainability, but reversely, low goal desirability and/or attainability predict an increase in action crisis. Therewith, the relationship would not be unidirectional, but reciprocal influences would exist.

Potential adaptive functions of devaluing goal desirability in an action crisis

Besides an analysis of reciprocal influences between the action crisis and goal appraisals, our aim was to shed light on the idea that particularly the devaluation of goal desirability serves adaptive functions for well-being if the pursuit of a goal is questioned, and constitutes part of individuals' self-regulatory ability to disengage from goals. This assumption has been formulated by several researchers investigating goal disengagement (Brandstätter et al., 2013; Brandtstädter & Rothermund, 2002; Carver & Scheier, 1998; Heckhausen & Schulz, 1995; Klinger, 1977; Tunali & Power, 2002; Wrosch et al., 2003) but, to our knowledge, not been empirically tested yet.

According to Klinger (1975), a goal's incentives, closely connected to its desirability, play a prominent role in people's lives. If the realization of a desired end is turned into question, successfully adjusting to the situation not only requires the individual to refrain from attempts to reach the goal, but likewise to withdraw goal commitment. This has to be achieved through some reorganization of the incentive system. Wrosch et al. (2003) noted:

> Relinquishment of commitment … seems to involve a reduction in the importance that is attached to the goal. Reducing the goal's importance, helping redefine it as not necessary for satisfaction in life (cf. Sprangers & Schwartz, 1999), allows the person to accommodate to the inability to reach the goal (Brandtstädter & Renner, 1990). (p.11)

Thus, when experiencing an action crisis, downgrading the goal's desirability might inherit the function of maintaining life satisfaction.

First evidence supports this reasoning. Couples' appraisals of the goal to have a child changed in line with the outcomes of fertility treatment and couples who, 6 months after unsuccessful treatment, still attributed higher desirability and/or lower attainability to their goal to have a child reported the highest levels of depressive symptoms (Salmela-Aro & Suikkari, 2008). Tunali and Power (2002) found that mothers of autistic children seemed to redefine the importance of various needs for living a fulfilled life, as they placed higher emphasis on being a good parent and lower emphasis on career success, compared with women without an autistic child. Moreover, women with the highest life satisfaction ordered various needs in a way that was more consistent with raising an autistic child. Based on findings that depression facilitates the withdrawal of effort and commitment and promotes a realistic view (Alloy & Abramson, 1988), Wrosch and Miller (2009) concluded that "depressive symptoms can be useful" (p. 1181). In a longitudinal study, girls with more

severe depressive symptoms improved their disengagement capacities to a greater extent, which predicted subsequent reductions in depressive symptomatology (Wrosch & Miller, 2009). Although not a direct test for beneficial effects of devaluing goal desirability, findings implicitly build on this assumption.

The present research

The present research seeks to explore the dynamic interplay between an action crisis and goal appraisals in the process of disengagement from a personal goal. Our aims were twofold. First, we intended to replicate the finding that an action crisis predicts a devaluation of goal desirability and attainability, and aimed to extend previous knowledge by testing whether, in turn, low goal desirability and/or attainability predict an increase in action crisis. Second, we wanted to test the assumption that by downgrading goal desirability, individuals might immunize themselves against the affective consequences of repeated failure and prevent negative implications for well-being which would arise if they abandoned their efforts without relinquishing commitment to the goal (Wrosch et al., 2003). We hypothesized that, in the presence of an action crisis, individuals who devalue goal desirability experience higher life satisfaction compared to individuals who do not devalue the desirability of their goal.

Hypotheses were tested in two longitudinal studies, in which levels of action crisis, goal desirability, attainability, and life satisfaction were tracked over the period of 6 months (Study 1) or 1½ years (Study 2). We focused on the goal to obtain a university degree as a high-level goal many people pursue in their early twenties. By choosing this goal, several requirements were met that we deemed important for an adequate test of our hypotheses. First, we could ensure that participants were actively engaged in goal pursuit, allowing change in the relevant variables to occur between measurement points. Second, completing a university degree offers sufficient feedback, for example, in the form of grades, engagement in extracurricular study-relevant activities, and by comparisons with classmates. If goal striving provided scarce feedback, individuals could only give hazy estimations of goal desirability and attainability, and these might not be meaningful enough to affect future levels of action crisis. Third, whereas many students pursue their studies highly motivated, a considerable proportion ends their studies without obtaining a degree. In the United States, 6 years after enrollment, 29.7 % have left college without earning a credential (National Student Clearinghouse Research Center, 2016). At Swiss universities, eight years after enrollment, 24% did not obtain a Bachelor's degree, and 35 % changed their major or university before

completing their degree (Swiss Federal Statistical Office, 2015). This points to study dropout as a highly relevant phenomenon.

Study 1

The first objective of Study 1 was to shed light on reciprocal influences between an action crisis and goal appraisals. We predicted that students with higher (vs. lower) levels of action crisis would, over time, devalue the desirability and attainability of their studies to a stronger extent. We further expected that students who perceived their study degree as less desirable or attainable than their peers would be more inclined to experience an increase in action crisis. The second objective was to test whether downgrading the study goal's desirability was linked to an increase in life satisfaction when experiencing an action crisis.

Method

Participants and procedure. Data were collected within a longitudinal study on self-regulation and well-being. It comprised two measurement points, one at the beginning (T_1) and one at the end (T_2) of the semester, as well as an intermediate experience sampling period. As all relevant measures were collected at T_1 and T_2, diary data are not of interest to this research. Participants were recruited through announcements during lectures, notice via the department mailing list, and advertisements on university billboards. At T_1, the sample consisted of 157 students (132 women; M_{age} = 22.96 years, SD_{age} = 4.05 years) enrolled in different fields of study (92 psychology students) at a public Swiss university. One hundred-thirty-eight students (117 women; 76 psychology students; M_{age} = 23.09 years, SD_{age} = 4.26 years) participated in T_2. The study was run online and compensated with partial course credit or app. $72.

Measures. All measures were assessed at both T_1 and T_2.

Action crisis. Level of action crisis with regard to the goal to successfully complete one's study degree was measured with an adapted version of the Action Crisis Scale (ACRISS; Brandstätter & Schüler, 2013). The six items (e.g., "I have thought of quitting my studies", α_{T1} = .78; α_{T2} = .80) were answered on a 5-point Likert type scale from 1 = *strongly disagree* to 5 = *strongly agree.*

Goal desirability. The extent to which participants valued their study goal was assessed with four items (e.g., "Pursuing my studies is important to me", 1 = *strongly*

disagree, 5 = *strongly agree*). Due to sufficient internal consistency (α_{T1} = .78; α_{T2} = .74), we combined items to a scale representing goal desirability.

Goal attainability. The extent to which participants viewed their study goal as attainable was measured with three items (e.g., "Successfully pursuing my studies seems difficult to me", recoded, 1 = *strongly disagree*, 5 = *strongly agree*). Due to sufficient internal consistency (α_{T1} = .71; α_{T2} = .70), we collapsed them into a scale representing goal attainability.

Life satisfaction. Participants rated their life satisfaction on the German version of the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Glaesmer, Grande, Braehler, & Roth, 2011). The scale consists of five statements (e.g., "In most ways my life is close to my ideal", 1 = *strongly disagree*, 7 = *strongly agree*) of high internal consistency (α_{T1} = .82; α_{T2} = .85).

Results

Table 1 presents means, standard deviations, and zero-order correlations among the study variables.

Table 1: Means (SDs) and Zero-Order Correlations Among Variables in Study 1

Variable	*M (SD)*	1	2	3	4	5	6	7
1. Action crisis (T_1)	2.49 (0.47)	––						
2. Action crisis (T_2)	2.23 (0.73)	.63***	––					
3. Goal desirability (T_1)	4.35 (0.55)	–.28**	–.32***	––				
4. Goal desirability (T_2)	4.36 (0.57)	–.34***	–.45***	.61***	––			
5. Goal attainability (T_1)	3.92 (0.67)	–.46***	–.47***	.29***	.19*	––		
6. Goal attainability (T_2)	3.92 (0.66)	–.42***	–.62***	.24**	.20*	.71***	––	
7. Life satisfaction (T_1)	5.24 (1.01)	–.36***	–.25**	.20*	.18*	.29***	.18*	––
8. Life satisfaction (T_2)	5.21 (1.05)	–.25**	–.34***	.17*	.12	.20*	.18*	.76***

Note. T (in T_1– T_2) = time.

* $p < .05$. ** $p < .01$. *** $p < .001$.

To test whether an action crisis predicts changes in goal desirability and attainability and, vice versa, goal desirability and attainability predict changes in action crisis, we used a cross-lagged *change regression model* (McArdle, 2009). The model estimates base-free change in the variables of interest by adding an unobserved (i.e., latent) variable (ΔT_1-T_2) to a variable measured at two time points. By setting the effect of T_1 predicting the criterion

variable at T_2 to a fixed value (= 1), the latent change captures the variance of the variable at T_2 that is not identical to the variance at T_1. Thus, ΔT_1-T_2 represents the residual change that has occurred from T_1 to T_2; as this change is not directly measured, it is considered *latent* (McArdle, 2009).

For testing our hypothesis, we included regression paths between goal desirability (goal attainability, respectively) at T_1 and the latent change in action crisis. Moreover, we included regression paths between action crisis at T_1 and the latent change in goal desirability (goal attainability, respectively). To control for the influence of the respective other variable when predicting changes in goal desirability or attainability, we included regression paths between (a) goal attainability at T_1 and the latent change in goal desirability and (b) goal desirability at T_1 and the latent change in goal attainability. The model was estimated in AMOS (Arbuckle, 2010).

Findings are displayed in Figure 1. Cross-sectionally (T_1), there was a moderate negative correlation between action crisis and goal attainability and a smaller, but still significant negative correlation between action crisis and goal desirability. As hypothesized, students with higher levels of action crisis at T_1 had a steeper decline in goal desirability over the course of the term, controlling for initial goal attainability. Furthermore, individuals with higher levels of action crisis at T_1 experienced a stronger decrease in goal attainability, controlling for initial goal desirability; this effect was smaller and only marginally significant. Reversely, students with lower goal attainability at T_1 experienced a stronger increase in action crisis, controlling for initial goal desirability. Unexpectedly, goal desirability did not significantly predict changes in action crisis. Still, results provide support for our assumption of reciprocal influences between an action crisis and the appraisal of the goal.

To test the hypothesis that devaluing goal desirability is beneficial for life satisfaction when experiencing an action crisis, we ran a multiple regression analysis in SPSS (version 20). We saved the standardized residuals to indicate change in goal desirability from T_1 to T_2 and the unstandardized residuals to indicate change in life satisfaction over the same time period as new variables in our data file. Then, residual change in life satisfaction was regressed on standardized residual change in goal desirability, z-standardized action crisis scores at T_1, and their product term[1]. The analysis revealed, R^2 = .06, $F(3,129)$ = 2.59, p = .056, that initial levels of action crisis, β = -.07, b = -0.05, SE = 0.06, $t(129)$ = -0.74, p = .463,

[1] When including goal attainability at T_1 as covariate, its effect was not significant, β = -.05, b = -0.03, SE = 0.06, $t(128)$ = -0.52, p = .604. As results were, moreover, unchanged, we did not include it in the final model.

and change in goal desirability, β = -.01, *b* = -0.01, *SE* = 0.06, *t*(129) = -0.16, *p* = .877, were no significant predictors for change in life satisfaction. As hypothesized, the interaction between action crisis and change in goal desirability was significant, β = -.24, *b* = -0.17, *SE* = 0.06, *t*(129) = -2.70, *p* = .008.

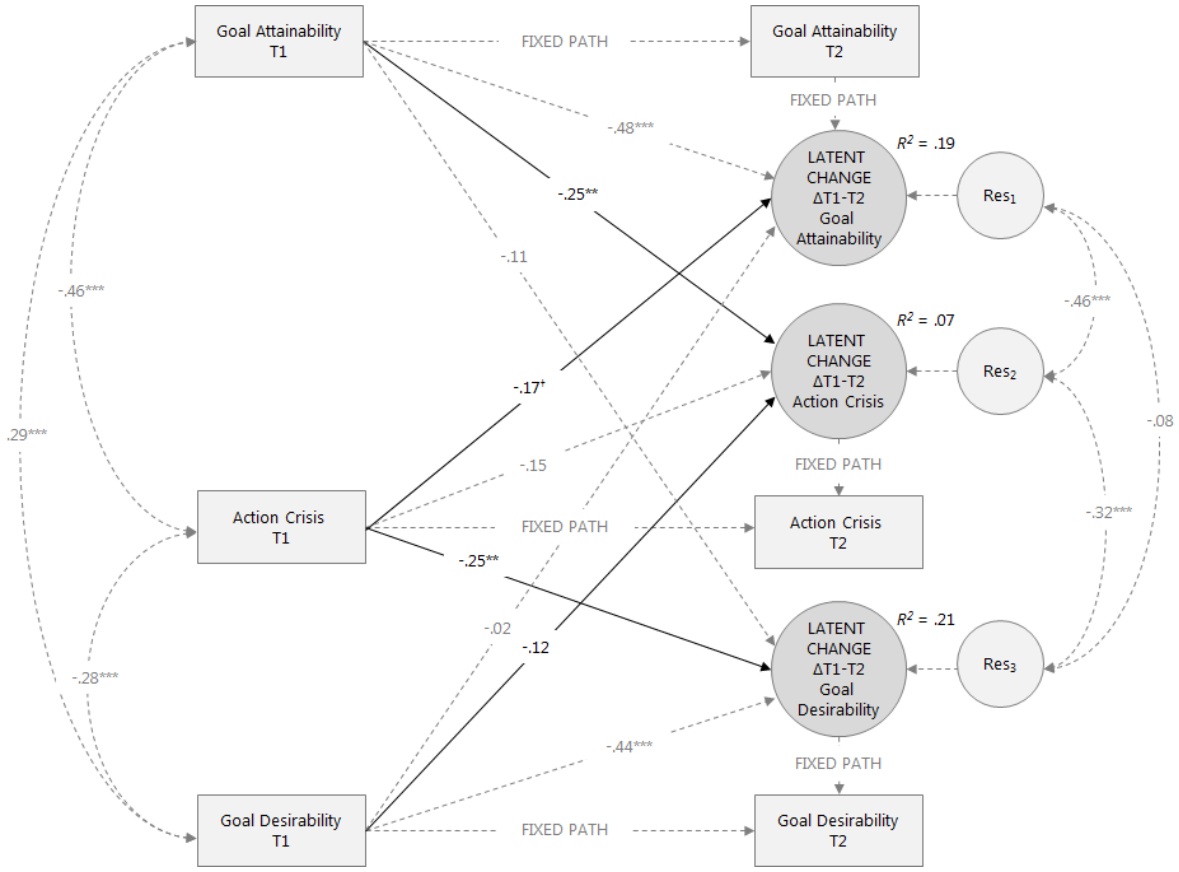

Figure 1: Cross-lagged change regression model for the reciprocal effects between an action crisis and goal appraisals in Study 1.

Note. Squares represent observed variables. Circles represent latent variables. Single-headed arrows indicate regression paths. Double-headed arrows indicate correlations. Regression paths relevant for hypothesis testing are printed in bold. Displayed parameters are standardized regression coefficients. R^2 gives the amount of explained variance in an endogeneous variable. Res represents residual variance in the prediction of endogeneous variables. As the model is saturated, fit cannot be estimated.

* *p* < .05. ** *p* < .01. *** *p* < .001.

Using the PROCESS macro (Hayes, 2013, Model 1) we found that in case of low initial action crisis (1 SD below the mean), increases in goal desirability tended to predict increases in life satisfaction, *b* = 0.16, *SE* = 0.10, *t*(129) = 1.72, *p* = .089 (see Figure 2). In the presence of high initial action crisis (1 SD above the mean), this relationship was reversed:

Now, decreases in goal desirability were linked to increases in life satisfaction, b = -0.16, SE = 0.08, $t(129)$ = -2.17, p = .032. When goal desirability decreased over the course of the semester (1 SD below the mean), initial action crisis did not significantly predict changes in life satisfaction, b = 0.12, SE = 0.08, $t(129)$ = 1.53, p = .130. When, however, goal desirability increased over the course of the semester (1 SD above the mean), higher initial levels of action crisis were linked to decreases in life satisfaction, b = -0.22, SE = 0.10, $t(129)$ = -2.26, p = .025. Thus, among students with action crisis levels one standard deviation above the mean, those who downgraded the desirability of their studies over the course of the semester experienced a simultaneous improvement in life satisfaction.

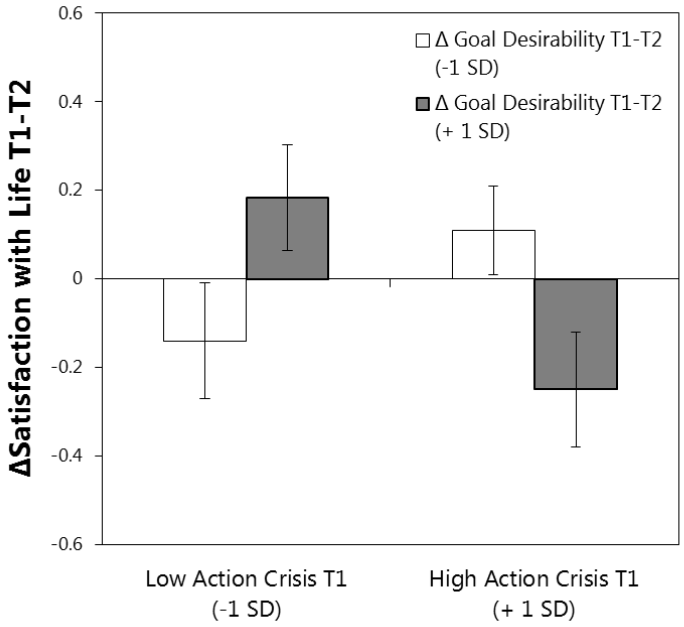

Figure 2: Change in life satisfaction as a function of initial action crisis and change in goal desirability at ±1 SD in Study 1. Error bars represent standard errors.

Brief discussion

Results supported our assumption of reciprocal influences between an action crisis and goal appraisals, even though not all hypothesized paths were significant. Replicating previous research (Brandstätter et al., 2013), students with higher levels of action crisis downgraded their studies' desirability and attainability to a greater extent. Reversely, students with lower goal attainability experienced a stronger increase in action crisis. Against our expectation, an analogous finding did not emerge for goal desirability. The reason might be that we studied a goal from the achievement domain, where insufficient attainability might be a frequent cause for conflict; also random error may account for it. We also found support for our second

hypothesis: Whereas an *increase* in goal desirability tended to be associated with increases in life satisfaction in unobstructed goal striving, it was a *decrease* in goal desirability that seemed to be beneficial for life satisfaction when experiencing an action crisis in one's studies as an identity-defining goal.

Study 2

In Study 2, we sought to replicate findings of Study 1 with a larger sample and higher number of measurement points. This allowed us to test the dynamic processes *within* individuals, what we deemed especially insightful for investigating how individuals, as a function of their own experiences, disengage from goals. We expected that when a student's action crisis with regard to his/her studies was higher than usual, this "deviation" from the own average predicts that, at the following measurement point, goal desirability and attainability are lower than usual. Likewise, when a student rates the desirability or attainability of the study goal as lower than usual, in the following, action crisis levels should be higher than usual. Using this approach, interindividual differences (e.g., personality) cannot account for the effects.

Due to its large sample size and long duration, Study 2 came with the methodological advantage that some students dropped out of university while participating in our research project. We did not assume that, in this subsample, processes between action crisis and goal appraisals would be contentually different from those of students who were in an action crisis but stuck to their study goal, as this decision might depend on many factors unrelated to this research. Still, we expected this data to give us a better understanding of the processes that occur in the final weeks and months before individuals abandon their goals. Specifically, we aimed to test whether reciprocal influences between action crisis and goal appraisals would perpetuate until the time of goal termination, causing a steady increase in action crisis and linear decreases in goal desirability and attainability when approaching study dropout. We did so by looking at individuals' trajectories in action crisis, goal desirability, and attainability when heading towards study dropout. As we assumed that an action crisis prompts regulatory processes that distance individuals from their goals, we expected higher initial action crisis to predict stronger devaluations (i.e., steeper negative slopes) of goal desirability and attainability. Reversely, increases in action crisis should be stronger as a result of lower initial goal desirability and attainability.

A study dropout usually marks the irreversible withdrawal of effort to complete the study goal. As it may be self-determined, but likewise be determined by external events,

withdrawal of commitment as the second part of disengagement may or may not have occurred. Withdrawing effort to reach a goal while remaining committed to it generates distress (Wrosch et al., 2003). As the devaluation of goal desirability might be understood as part of the emotional detachment from the goal, we hypothesized that individuals who devalue the desirability of their studies experience better life satisfaction shortly after study dropout, compared to individuals who do not devalue its desirability before this transition.

Method

Participants and procedure. Data were collected within a larger research project on the pursuit of personal goals. Participants, 207 freshmen (145 women, M_{age} = 21.0 years, SD_{age} = 3.61, 72 psychology students) at a public Swiss university, were contacted at 12 measurement points ($T_1 - T_{12}$) over a period of four semesters (1 ½ years). The study was advertised via an email delivered by the legal department of the university, through flyers, announcements during lectures, and advertisements on university billboards. Participants completed the study online and received a coupon of a popular mail-order company (worth approximately US$33 for the first and US$11 for each subsequent measurement point) in return for their participation[2].

Measures. Measures of action crisis ($\alpha \geq .77$), goal desirability ($\alpha \geq .83$), goal attainability ($\alpha \geq .63$), and life satisfaction ($\alpha \geq .85$) were the same as in Study 1 and presented to participants at all 12 measurement points.

Study dropout. At 11 measurement points ($T_2 - T_{12}$), students reported whether they still pursued or had dropped out of their studies. If a dropout had occurred, participants rated their life satisfaction (and other measures not relevant for this investigation) and were excluded from further measurement points.

Results

Due to the dependency of observations, we analyzed our hypotheses by means of hierarchical linear modeling. The advantage of this approach is that it captures correlations between repeated measures by introducing random effects (Bauer, Preacher, & Gil, 2006). Our data corresponded to random intercept random slope models with two levels. Level 1 included between-person variability (i.e., the person mean) and within-person variability (i.e.,

[2] Participants who did not take part in two consecutive measurement points were excluded from the study.

fluctuations around the person mean). Level 2 represented between-person variability. Models were estimated in R (version 3.1.1; R Core Team, 2014) with the multilevel package (Bliese, 2013) using maximum likelihood estimation. Table 2 presents means, standard deviations, and zero-order correlations (aggregate level) among the study variables.

Table 2: Means (SDs) and Zero-Order Correlations (Aggregate Level) Among Variables in Study 2

		Full sample				Subsample with study dropout			
Variable	ICC_t	*M (SD)*	1	2	3	*M (SD)*	1	2	3
1. Mean action crisis	.94	2.35 (0.67)	––			2.93 (0.78)	––		
2. Mean goal desirability	.97	4.34 (0.61)	–.56***	––		3.93 (0.70)	–.61***	––	
3. Mean goal attainability	.96	3.60 (0.60)	–.66***	.33***	––	3.28 (0.66)	–.67***	.42**	––
4. Mean life satisfaction	.97	5.24 (0.94)	–.57***	.38***	.36***	4.88 (0.95)	–.50**	.39*	.40**

Note. ICC = Intraclass Correlation Coefficient.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Analyses with the full sample. We had hypothesized that an action crisis predicts a devaluation of the goal's desirability and attainability and, reversely, low goal desirability and attainability predict an increase in action crisis. We statistically analyzed the proposed time-delayed effects from one measurement point to the next. Therefore, we created new variables in which data entries of our predictor variables were shifted by one measurement point, such that our criterion variables at any given time point *t* could be regressed on the predictor variables at the previous time point *t*-1. In line with recommendations to distinguish the between- and within-subjects level of analysis (Bolger & Laurenceau, 2013), we isolated the within-person variability of a specific predictor (Level 1) from the person's average across measurement points (Level 2). Thus, in our models, for each variable we entered a) a grand mean centered person mean and b) the person mean centered raw score for the specific measurement point. A time variable $Time_{ij}$ (0-11) was included in all models to control for possible changes over the research project.

The first random intercept random slope model tested whether goal desirability at a specific measurement point ($\text{Goal Desirability}_{ij}$) was predicted by fluctuations in action crisis at the previous measurement point (γ_{10}), when the person mean in action crisis (γ_{20}) and fluctuations in goal desirability at the previous measurement point (γ_{30}) were controlled. Analogously to Study 1, the person mean in goal attainability (γ_{40}) and fluctuations in goal

attainability at the previous measurement point (γ_{50}) were controlled. Finally, time (γ_{60}) was included. Random slopes were estimated for fluctuations in action crisis at the previous measurement point (u_{1j}). The full model reads:

$$\text{Goal Desirability}_{ij} = \gamma_{00} + \gamma_{10}(ActionCrisis_{t-1} - PMActionCrisis) + \gamma_{20}PMActionCrisis + \gamma_{30}(GoalDesirability_{t-1} - PMGoalDesirability) + \gamma_{40}PMGoalAttainability + \gamma_{50}(GoalAttainability_{t-1} - PMGoalAttainability) + \gamma_{60}Time + u_{0j} + u_{1j}(ActionCrisis_{t-1} - PMActionCrisis_{ij}) + \varepsilon_{ij}$$

Results are summarized in Table 3. The intercept represents the level of goal desirability when all other variables in the model are zero. For our hypothesis, the regression weight for fluctuations in action crisis at the previous measurement point was the most informative (γ_{10}). Results supported the assumption that when levels of action crisis were higher than usual, the subjective desirability of the study goal was lower than usual at the next measurement point.

The second model tested whether goal attainability was predicted by individual fluctuations in action crisis at the previous measurement point, when the person mean in action crisis, fluctuations in goal attainability at the previous measurement point, the person mean in goal desirability, fluctuations in goal desirability at the previous measurement point, and time were controlled. Random slopes were estimated for fluctuations in action crisis at the previous measurement point. Findings were as hypothesized (see Table 3). When levels of action crisis were higher than usual, the perceived attainability of the study goal was lower than usual at the next measurement point.

In the third model, action crisis levels were predicted by fluctuations in goal desirability and goal attainability at the previous measurement point, when the person mean in the respective variables and time were controlled; random slopes were allowed for the two focal predictors, fluctuations in goal desirability and attainability at the previous measurement point. As Table 3 illustrates, students who perceived their study degree as less attainable than they usually did experienced relatively higher action crisis levels at the next measurement point. Replicating findings of Study 1, fluctuations in goal desirability did not significantly influence action crisis levels at the next measurement point.

Together, findings demonstrate that, also on an intraindividual level, above average experiences of action crisis forecast devaluations of goal desirability and attainability. Reversely, low goal attainability predicted an increase in action crisis, whereas goal desirability did not.

Table 3: Results of Three Multilevel Models Predicting Fluctuations in Goal Desirability, Goal Attainability, and Action Crisis in the Full Sample of Study 2

	Goal desirability *t*				Goal attainability *t*				Action crisis *t*			
			CI 95				*CI 95*				*CI 95*	
Fixed effects	B	*(SE)*	Lower	Upper	B	*(SE)*	Lower	Upper	B	*(SE)*	Lower	Upper
Intercept	4.313	(0.040) ***	4.235	4.391	3.567	(0.037) ***	3.495	3.639	2.331	(0.037) ***	2.259	2.403
Level 1 (within-person)												
Action crisis *t*–1	–0.090	(0.035) *	–0.158	–0.021	–0.107	(0.032) ***	–0.170	–0.045	0.195	(0.029) ***	0.139	0.250
Goal desirability *t*–1	0.095	(0.029) ***	0.039	0.151	–0.097	(0.032) **	–0.160	–0.034	0.004	(0.046)	–0.085	0.094
Goal attainability *t*–1	–0.001	(0.024)	–0.049	0.047	0.110	(0.028) ***	0.055	0.164	–0.111	(0.036) **	–0.182	–0.040
Time	0.000	(0.003)	–0.005	0.006	0.001	(0.003)	–0.006	0.007	0.001	(0.004)	–0.006	0.008
Level 2 (between-person)												
Action crisis	–0.603	(0.075) ***	–0.751	–0.456	–0.667	(0.061) ***	–0.786	–0.548				
Goal desirability					–0.061	(0.065)	–0.118	0.067	–0.431	(0.055) ***	–0.540	–0.323
Goal attainability	–0.059	(0.082)	–0.222	0.104					–0.611	(0.057) ***	–0.723	–0.500
			CI 95				*CI 95*				*CI 95*	
Random effects	Est	Corr	Lower	Upper	Est	Corr	Lower	Upper	Est	Corr	Lower	Upper
Level 1 (within-person)												
Residual	0.342		0.330	0.355	0.399		0.384	0.413	0.423		0.407	0.439
Level 2 (between-person)												
Intercept	0.501		0.450	0.557	0.434		0.388	0.484	0.414		0.369	0.465
Action crisis *t*–1	0.329	0.155	0.275	0.394	0.220	0.262	0.163	0.297				
Goal desirability *t*–1									0.315	–0.174	0.232	0.429
Goal attainability *t*–1									0.244	–0.030	0.174	0.342
Model fit	Est				Est				Est			
–2 log likelihood	–994.253				–1166.835				–1281.599			
AIC	2010.506				2355.670				2591.197			
BIC	2070.716				2415.880				2667.828			
ICC	0.681				0.640				0.606			

Note. *t* –1= previous measurement point, B = unconditional model estimate, *SE* = standard error,
Est = estimate, CI = confidence interval, Corr = correlation of random slope and random intercept, AIC = Akaike Information Criteria, BIC = Bayesian Information Criteria. Results are based on 199 participants and 1'768 observations.

* $p < .05$. ** $p < .01$. *** $p < .001$.

We also tested whether devaluing the goal's desirability might benefit life satisfaction in an action crisis. Results of a random intercept random slope model revealed a marginally significant interaction (between-subjects level) between action crisis and residual change in goal desirability between two consecutive measurement points on life satisfaction at the later measurement point. However, the pattern of the interaction did not justify the conclusion that downgrading the goal's desirability benefits life satisfaction in an action crisis; rather, life satisfaction was reduced irrespective of students' change in goal desirability. Partially replicating results of Study 1, in the absence of an action crisis, upgrading the study goal's

desirability was descriptively linked to higher life satisfaction, and this benefit was nullified in an action crisis. The analysis is documented in detail in the Supplement of Part I.

Analyses with the subsample of students who dropped out of their studies. Next, we turned to the subsample of students (n = 42) who dropped out of their studies over the course of our research project. As a study dropout could occur at any time and participants were excluded from further measurement points, the number of observations we had for each individual was highly diverse (M = 6.81, SD = 3.25, range = 1 to 12). To analyze individual slopes in action crisis, goal desirability, and goal attainability, we adjusted individuals' observations at the time of study dropout, and, in the following, denote this measurement point as T. T-1 was the final measurement before study dropout, and hence, the last time that goal-related variables (i.e., action crisis, goal desirability, goal attainability) were assessed. Following this principle, T-n marks the measurement n time points before an individual reported his or her study dropout. Figures 3 to 5 display individual trajectories (raw data) in action crisis, goal desirability, and goal attainability when approaching study dropout.

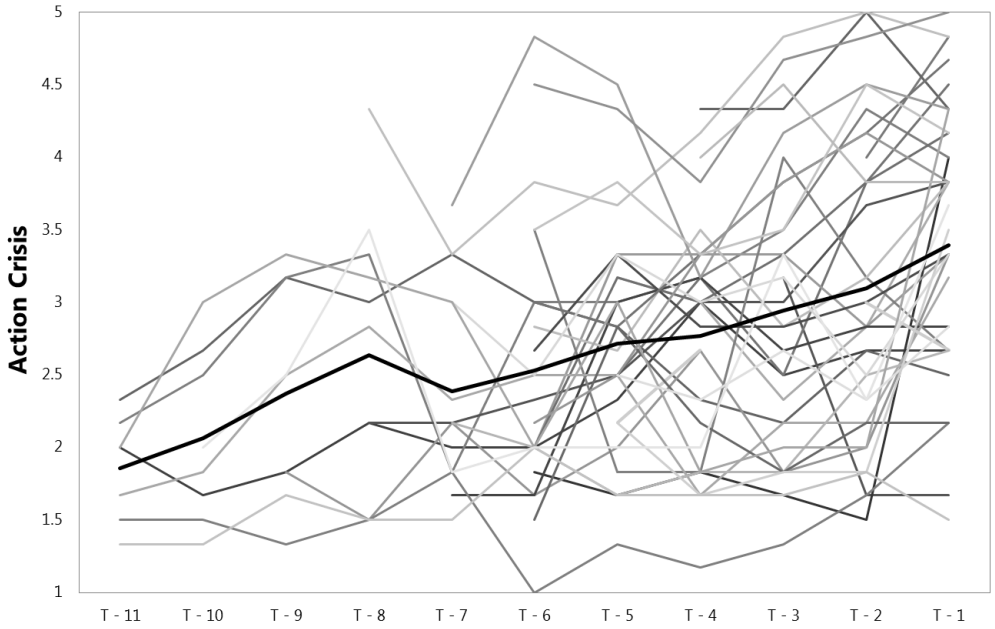

Figure 3: Individual trajectories of action crisis in the subsample of students (n = 42) who drop out of their studies in Study 2.

Note. T (in T-1 to T-11) = time before study dropout. Lines indicate individual trajectories. Bold line represents mean trajectory of the sample.

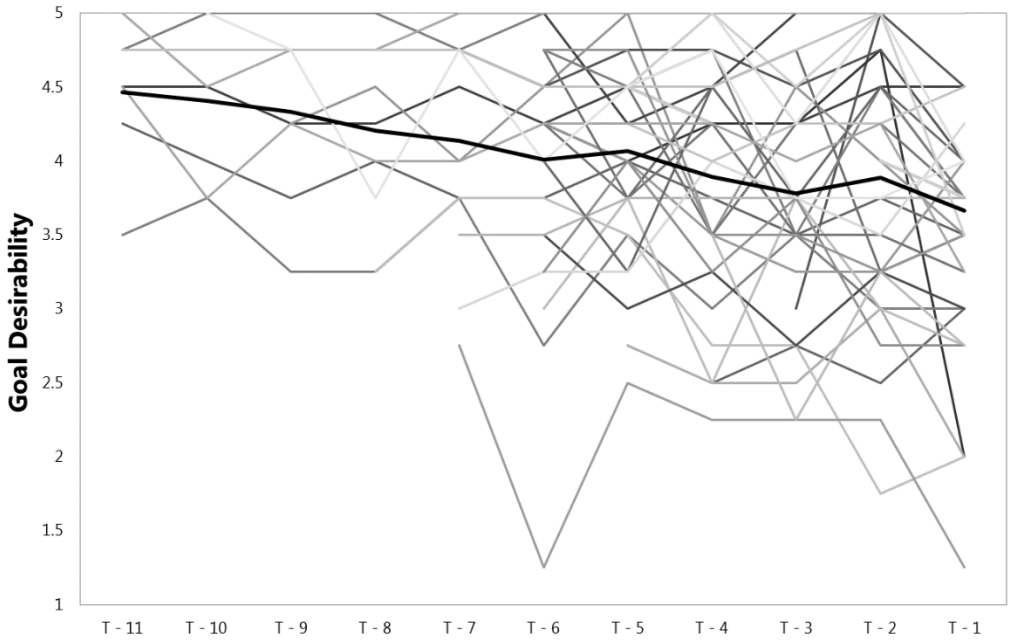

Figure 4: Individual trajectories of goal desirability in the subsample of students (n = 42) who drop out of their studies in Study 2.

Note. T (in T-1 to T-11) = time before study dropout. Lines indicate individual trajectories. Bold line represents mean trajectory of the sample.

To statistically model intra-individual slopes, we ran three random intercept random slope models. In each, we regressed the respective criterion variable (action crisis, goal desirability, or goal attainability) on $Time_{ij}$ (-11 to 0), indicating the number of measurement points before study dropout. The random effect for $Time_{ij}$ represented the amount of individual change in the criterion from T-n to study dropout. By inspecting the significance of the fixed effect for $Time_{ij}$, we could tell that action crisis levels increased with decreasing temporal distance to study dropout, b = 0.12, SE = 0.02, $t(207)$ = 6.53, p < .001. Concurrently, there was a significant decrease in how desirable, b = -0.06, SE = 0.01, $t(207)$ = -3.98, p < .001, and attainable, b = -0.06, SE = 0.01, $t(207)$ = -4.83, p < .001, students deemed their study goal.

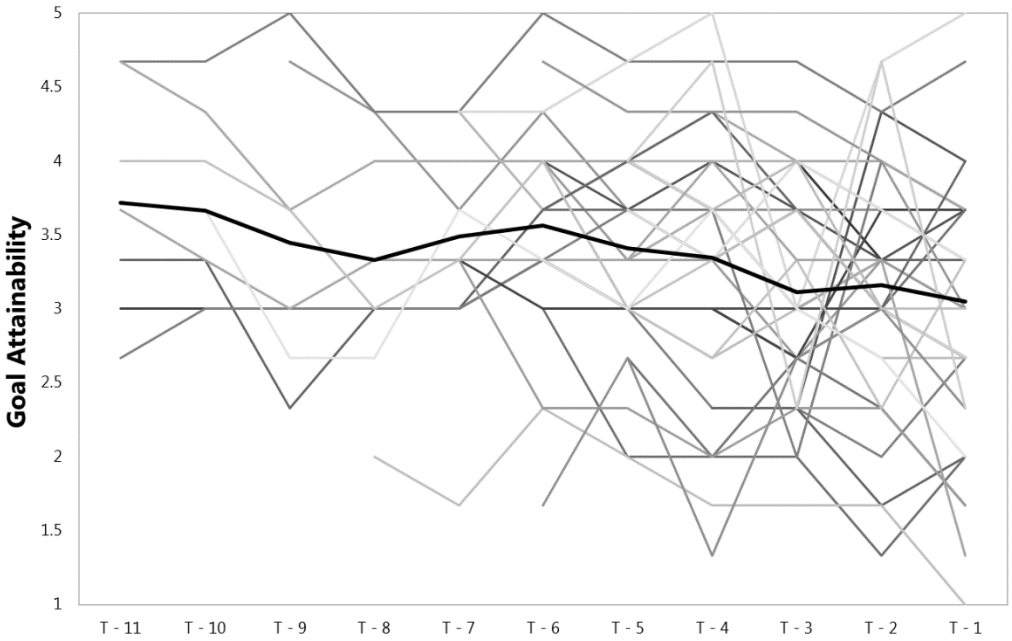

Figure 5: Individual trajectories of goal attainability in the subsample of students (n = 42) who drop out of their studies in Study 2.

Note. T (in T-1 to T-11) = time before study dropout. Lines indicate individual trajectories. Bold line represents mean trajectory of the sample.

To analyze whether goal desirability and attainability declined as a function of higher initial action crisis, and reversely, increases in action crisis occurred as a function of lower initial goal desirability and attainability, we extracted individuals' slope parameters (indicating the predicted change until study dropout) in action crisis, goal desirability, and goal attainability from the models described above and saved them as new variables in our data file. Then, we ran three multiple regression analyses using the pequod package (Mirisola & Seta, 2015).

In the first regression, individuals' initial levels of action crisis were used to predict their slope in goal desirability. Like in previous analyses, initial goal attainability was controlled, β = .02, b = 0.001, SE = 0.01, $t(39)$ = 0.07, p = .909. Supporting our line of argument, students with an initially more severe action crisis downgraded the desirability of their studies to a greater extent, β = -.53, b = -0.02, SE = 0.007, $t(39)$ = -3.17, p = .003, R^2 = .30, $F(2,39)$ = 8.26, p = .001.

In the second regression, individuals' initial levels of action crisis were used to predict their slope in goal attainability, controlling for initial goal desirability, β = -.04, b = -0.0005, SE = 0.002, $t(39)$ = -0.22, p = .830. Results revealed that students with an initially more

severe action crisis downgraded the attainability of their study degree to a marginally greater extent, β = -.37, *b* = -0.004, *SE* = 0.002, *t*(39) = -2.00, *p* = .052, R^2 = .12, *F*(2,39) = 2.70, *p* = .080.

In the third regression, individuals' initial levels of goal desirability and goal attainability were used to predict their slope in action crisis. Individuals with lower goal attainability experienced a stronger increase in action crisis, β = -.35, *b* = -0.02, *SE* = 0.01, *t*(39) = -2.23, *p* = .032, R^2 = .16, *F*(2,39) = 3.65, *p* = .035. Contrary, individuals with lower goal desirability did not experience a stronger increase in action crisis, β = -.10, *b* = -0.01, *SE* = 0.01, *t*(39) = -0.62, *p* = .536. That is, replicating results of Study 1 and the full sample, higher initial levels of action crisis predicted stronger devaluations of goal desirability and attainability. Reversely, lower levels of goal attainability (but not desirability) forecasted stronger increases in action crisis until the point in time when individuals abandoned their study goal.

Next, we tested whether devaluing the studies' desirability predicts higher life satisfaction shortly after dropout. In a multiple regression, life satisfaction after study dropout (T) was regressed on the individual slope in goal desirability before study dropout, controlling for life satisfaction shortly before study dropout (T-1). The model, R^2 = .45, *F*(2,25) = 10.25, *p* < .001, revealed that life satisfaction at T-1 significantly predicted life satisfaction after study dropout, β = .73, *b* = 0.74, *SE* = 0.17, *t*(25) = 4.47, *p* < .001. Contrary to our expectation, there was no effect of the slope in goal desirability on life satisfaction after study dropout, β = -0.19, *b* = -7.38, *SE* = 6.33, *t*(25) = -1.17, *p* = .255. Exploratorily, we conducted another regression analysis in which we controlled for life satisfaction two measurement points before study dropout. Also in this model, R^2 = .69, *F*(2,20) = 21.75, *p* < .001, life satisfaction at T-2 was a significant predictor of life satisfaction after study dropout, β = .89, *b* = 0.99, *SE* = 0.15, *t*(20) = 6.58, *p* < .001. The effect of the slope in goal desirability on life satisfaction after study dropout was marginally significant, β = -.25, *b* = -10.09, *SE* = 5.41, *t*(20) = -1.86, *p* = .077. When running a third regression analysis, R^2 = .74, *F*(2,19) = 26.30, *p* < .001, controlling for life satisfaction at T-3, β = .93, *b* = 1.28, *SE* = 0.18, *t*(19) = 7.24, *p* < .001, the effect of the slope in goal desirability was significant, β = -.30, *b* = -11.98, *SE* = 5.18, *t*(19) = -2.31, *p* = .032. This analysis suggests that individuals with a steeper decrease in goal desirability report higher life satisfaction shortly after study dropout[3].

[3] Of 42 participants who reported their study dropout, 28 shortly stated the reason for it. We coded participants' answers regarding whether they referred to low desirability (1 = yes, 0 = no) and/or low

Brief discussion

Study 2 confirmed that an action crisis predicts decreases in the desirability and attainability students ascribe to their study goal. Supporting our assumption of reciprocity, low perceived attainability of completing one's studies contributed to an increase in action crisis. Inconsistent with our prediction, the desirability of the goal to complete one's studies did not have this effect. Besides replicating results of Study 1, this study adds to previous knowledge by verifying processes on an intraindividual level of analysis. Moreover, analyses in the subsample of students who dropped out of their studies revealed that action crisis levels linearly increase until study dropout (and do so more as a function of low initial goal attainability), whereas the study goal's desirability and attainability steadily decline (and do so more as a result of high initial action crisis). The conclusion that downgrading goal desirability serves adaptive functions for life satisfaction in an action crisis was not justified based on the full sample of this study, although findings suggest that the relationship between goal desirability and life satisfaction might be different in an action crisis than in unobstructed goal striving. Among students who dropped out of their studies, those who beforehand more strongly downgraded the desirability of their study goal reported higher life satisfaction after study dropout. Improvements in life satisfaction might start well before this transition. Due to limited sample size, this finding is preliminary and should be replicated in future studies.

Discussion

Two longitudinal studies investigated the dynamic interplay between an action crisis, the phase in goal pursuit in which further striving is called into question, and appraisals of goal desirability and attainability in the disengagement process from a personal goal. Focusing on students' endeavor to complete a university degree as a self-defining, high-level goal, we replicated Brandstätter and colleagues' (2013) finding that an action crisis predicts devaluations of goal desirability and attainability. Going beyond earlier studies, we proved the relationships both in between- and within-subjects analyses. Therewith, findings provide

attainability (1 = yes, 0 = no). Sixteen participants (57.14%) mentioned a desirability-related reason (e.g., lack of interest for study topic) and 9 (32.14%) mentioned an attainability-related reason. Of the latter 9 participants, 5 (17.86%) mentioned low performance (e.g., failed exams, poor grades) and 4 (14.29%) mentioned external factors limiting attainability (e.g., child-care, poor health). That, retrospectively, desirability-related reasons were almost twice as frequent as attainability-related reasons (even though increases in action crisis resulted from low *attainability*) points to the relevance of downgrading goal desirability in disengaging from an unattained goal.

consistent evidence that an action crisis activates regulatory processes that distance individuals from their goals.

The present studies extend previous knowledge by testing an assumption that we formulated on the basis of expectancy-value models of motivation (Atkinson, 1964; Feather, 1982; Vroom, 1964); the assumption that subjective desirability and attainability are relevant predictors for the experience of action crisis. Previous studies (Brandstätter et al., 2013) did not enable an adequate test of this hypothesis (given that experiences with regard to goals from different domains were averaged, regular goal striving and feedback on goal desirability and attainability were not ensured). Findings of both studies showed that, when analyzed between- and within-subjects, low goal attainability, but not goal desirability, predicts an increase in action crisis. This corroborates our reasoning that confronting obstacles in goal striving leads individuals to call successful goal attainment into question. If obstacles prevail, initial concerns may develop into a period of severe doubt, in which the option of disengagement over time is given increasing weight.

That we did not find analogous effects for goal desirability was unexpected; however, the consistency across studies speaks against random error. We think that non-significance may result from the fact that we focused on a goal from the achievement domain, where unfavorable outcome expectancies are the most frequent cause for conflict. The desirability of the goal to complete one's degree, by contrast, might be generally high among students, and indeed, descriptive statistics point to this. Thus, for most subjects, goal desirability might not have fallen below a necessary threshold to account for increases in action crisis. This reasoning implies that in other contexts (e.g., relationships), insufficient goal desirability might well predict increases in action crises. Although we intentionally chose the goal to complete one's studies as a suitable context to test our hypotheses, the fact that we focused on one single goal limits the generalizability of our findings. To draw final conclusions about the predictive power of goal desirability for the development of action crises, processes have to be studied with respect to goals in varying domains. This, however, might be challenging as the pursuit of most personal goals (outside university) follows a much less defined course, and is often marked by heterogeneity and high interindividual variance.

Another limitation is that we cannot provide evidence on the *causes* of an action crisis, but can only speak about its development over time (Brandstätter et al., 2013). Making inferences about causality would call for a prospective study design, in which no participant is experiencing an action crisis when entering the study. Clearly, an experimental design would

be the neatest way of investigation, however, when being interested in naturalistic goal striving, this could be difficult from a methodological and ethical point of view.

What was striking to us was that the pattern of reciprocity we found pointed out a certain asymmetry, inasmuch as the experience of an action crisis increased as a result of low goal *attainability*, whereas discounting processes as a timely consequence of the action crisis affected the goal's *desirability* more than its attainability. It is not far to seek that regarding the goal to complete a study degree, it is more difficult to discount its attainability than its desirability (in a self-serving way), due to the presence of many other students who pursue the same degree successfully. In broader terms, what we think this pattern suggests is that even when goal pursuit is questioned as a result of unfavorable outcome expectancies, individuals mainly "support goal abandonment through increasing the availability of cognitive content that undermines the attractiveness of the blocked goal" (Brandtstädter & Rothermund, 2002, p. 127). This is in line with Klinger's (1975) theorizing, who argued that depression is adaptive as it releases commitment to a desired end. It also converges with more recent theoretical and empirical advancements, where the devaluation of goal desirability is understood as a way of accommodation (Brandtstädter & Rothermund, 2002) and the relinquishment of goal commitment represents part of people's ability to disengage from goals (Wrosch et al., 2003).

What the present studies are silent about is whether the devaluation of the goal occurs automatically or is intentional to some extent. The change in appraisals might result from the resurgence of a deliberative mindset, which has been linked to unbiased evaluations of goal desirability and attainability (Gollwitzer, 1990). Alternatively, it might be negative affect, common in an action crisis, that attenuates goal commitment and brings goal-related judgments down to earth (Klinger, 1977). The devaluation of the goal's features might also equal an unintentional accommodative process (Brandtstädter & Rothermund, 2002) or a self-regulatory strategy that individuals employ to distance themselves from an obsolete goal (Heckhausen et al., 2010). At present, several strands of research may explain the results differently, and future studies might want to identify the most convincing explanation.

Whatever the explanation may be, researchers agree about the self-protecting effects of emotional relinquishment when a goal is out of reach (Brandtstädter & Rothermund, 2002; Carver & Scheier, 1998; Wrosch et al., 2003). In the present studies, we have provided first, though not final evidence that devaluing goal desirability may be adaptive. Whereas an increase in goal desirability seems to be linked to an increase in life satisfaction in unobstructed goal striving, in an action crisis, life satisfaction might benefit from discounting

the desirability of the goal (Study 1). Moreover, life satisfaction after study dropout was better for students who had beforehand downgraded the desirability of their study goal (Study 2). Notable in this respect is the very limited sample size, which points to the need of replication. Relating devaluations of goal desirability before goal abandonment to outcomes after this transition (e.g., well-being, health) might be an interesting avenue for future research.

Future studies might also investigate the adaptive potential of an action crisis for the development of alternatives to the obstructed goal. Presumably, seeing a goal through the rose-colored glasses of an intact implemental mindset prevents the consideration of alternative endeavors, and breaking the implemental bias might be a necessary precondition for other pathways to be taken into account. It would be interesting whether devaluations of the goal as predicted by the action crisis covary with the simultaneous or time-lagged upgrading of alternative endeavors that might step in as substitute to the obstructed goal.

Leaving several questions for future research, what we hope our studies to offer is a perspective on goal disengagement that has rarely been applied before. Whereas the majority of social-psychological studies takes unidirectionality of effects as their basis (Kuhl, 2001), complexity in real life suggests that often causes cannot be separated from consequences. In these studies, reciprocal processes became apparent when analyses were conducted between and within individuals, in the full sample as well as in the subsample of students who gave up their goal. We see this as support for the reasoning that goal disengagement is not a single event, but a "slow-acting back-door feedback process" (Carver & Scheier, 1998, p. 203). A dynamic interplay between feelings of doubt and goal related appraisals might explain how individuals eventually come to release a once firmly held goal.

Part II

When Doubting Impairs Acting

Feeling Torn Between Goal Persistence and Disengagement Compromises Performance

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Abstract

An action crisis marks the experience of conflict between the opposing forces of holding on to and letting go of a personal goal after goal striving has been severely obstructed and/or the goal has lost part of its appeal. In this research, we argue that experiencing an action crisis interferes with goal-directed action and compromises performance. In Study 1 (N = 236), students with higher levels of action crisis regarding the completion of their study degree achieved a lower grade point average and obtained fewer credits at the end of the term, controlling for prior-term performance. In Study 2 (N = 74), individuals in whom the experience of action crisis (vs. unobstructed goal striving) had experimentally been induced showed worse performance in a subsequent, goal-unrelated task. Implications of performance impairments resulting from the action crisis for goal striving in general and the disengagement process in particular are discussed.

Introduction

When we pursue a goal, be it to acquire an academic qualification or to run a marathon, and we experience doubt, question the further adherence to our goal – how does that affect our performance, in relation to the goal as well as other tasks we currently work on? Can we put doubts aside when we go for a run or study for upcoming exams? Or do performance impairments, on the contrary, have to be expected, which increase the weight of evidence in favor of goal abandonment, and bring us closer to the point where it is a clear necessity to abandon the goal?

We investigated these questions in the context of the action crisis, a motivational conflict between further persistence and disengagement marked by renewed deliberation and doubt, which arises after a series of obstacles in goal striving has been experienced and/or the goal has lost part of its appeal (Brandstätter, 2003; Brandstätter & Schüler, 2013). Based on previous findings (Brandstätter et al., 2013; Herrmann & Brandstätter, 2015), which will be reviewed in the introduction, we assumed that being in an action crisis causes performance impairments, beyond those that might have contributed to the emergence of an action crisis in the first place. Evidence for this notion would, in our view, contribute to a better understanding of the goal disengagement process.

Goal disengagement and the concept of action crisis

After a long period of undue neglect in psychological research, the topic of goal disengagement, for two decades, has received increasing attention (Brandstätter, 2003; Brandtstädter & Rothermund, 2002; Wrosch et al., 2003). Despite now existing knowledge of the advantages of disengagement from a goal that is not attainable for well-being and the balancing of endeavors that may be pursued in life (Wrosch et al., 2003), the processes that lay between determined goal striving and the point where emotional and behavioral disengagement is complete still live a shadowy existence. Theoretical assumptions were formulated early by disengagement pioneer Eric Klinger (1975), but have experienced surprisingly little empirical verification.

The concept of action crisis investigates goal disengagement from a process perspective on the level of concrete personal goals. The approach favors the understanding of disengagement as a lengthy and troublesome endeavor, which starts considerably before individuals ultimately give up their goal (Brandstätter et al., 2013; Brandstätter & Schüler, 2013). Although recent findings show that goal disengagement is often preceded by an action

crisis, and more intense action crises predict goal abandonment with shorter temporal distance (Herrmann & Brandstätter, 2015), an action crisis does not have to lead to disengagement, but may also be overcome with renewed goal commitment (Brandstätter et al., 2013; Brandstätter & Schüler, 2013). Thus, the action crisis marks the experience of conflict between the opposing options of holding on to and letting go of a personal goal, resulting in increasing forces to disengage from a goal to which one still feels committed.

In line with this conceptualization as conflict, the action crisis has been linked to negative affect and impairments in psychological and physical well-being over time (Brandstätter et al., 2013). Action-crisis specific shifts were also observed on the level of individuals' *mindset*, that is, their cognitive orientation towards their goal (Brandstätter & Schüler, 2013; Herrmann et al., 2014). According to the Rubicon model and mindset theory of action phases (Gollwitzer, 1990; Gollwitzer, 2012), the actional phase of goal realization is supported by an *implemental* mindset, which promotes persistence and successful goal attainment (Armor & Taylor, 2003; Brandstätter & Frank, 2002). The action crisis, despite being classifiable to the actional phase, is characterized by a mixture of implemental and deliberative thoughts (Brandstätter & Schüler, 2013); the latter known from the phase in which individuals weigh the pros and cons to decide whether a goal should be set (Heckhausen & Gollwitzer, 1987). Therewith, the action crisis unifies features of two phases that are usually distinct, which emphasizes its exceptional standing to the prototypical course of goal striving sketched in the Rubicon model.

The disruption of the implemental mindset by upcoming deliberation in the action crisis has been denoted as a necessary precondition for goal disengagement to proceed (Brandstätter et al., 2013). Consistent with findings that individuals hold overly positive appraisals of goal desirability and attainability under the influence of an implemental (vs. deliberative) mindset (Gollwitzer & Kinney, 1989; Taylor & Gollwitzer, 1995), longitudinal studies found a devaluation of the goal's desirability and attainability to occur in timely succession of the action crisis (Brandstätter et al., 2013; Ghassemi, Bernecker, Herrmann, & Brandstätter, 2017). Especially the devaluation of goal desirability was assigned an important function in the self-regulatory ability to disengage from goals: By downgrading goal desirability, people might immunize themselves against the negative implications for well-being, which would arise if efforts were ceased without relinquishing commitment to the goal (Brandstätter et al., 2013; Brandtstädter & Rothermund, 2002; Ghassemi et al., 2017; Klinger, 1975; Tunali & Power, 2002; Wrosch et al., 2003).

Despite recent advancements in the understanding of the role of the action crisis in the disengagement process, its implications for individuals' performance have not yet been conclusively testified (Brandstätter & Herrmann, in press). This investigation, however, is of pivotal interest. By further dampening chances of successful goal attainment, performance impairments as a result of the action crisis might have a relevant function in the disengagement process. They might "drive the system out of the intermediate zone of uncertainty or conflict" (Brandtstädter & Rothermund, 2002, p. 123) and towards the abandonment of the goal. Thus, reductions in goal-related performance as a result of an action crisis might clarify a situation of prior ambiguity. Therewith, an action crisis would not only lead to goal disengagement due to existing difficulties in goal striving (and resulting appraisals of low goal attainability), but also due to processes set in motion *by* its experience (Herrmann & Brandstätter, 2015).

Predictive effects of the action crisis on performance

Why could performance impairments in consequence of the action crisis be expected? As indicated by devaluations of goal desirability and attainability (Brandstätter et al., 2013; Ghassemi et al., 2017), the action crisis might be associated with motivational costs. If it is not clear what more can be done, and there is a high risk that efforts will be in vain, the motivational basis for wholehearted goal pursuit is not given. Based on the principle of expectancy-value models of motivation (Atkinson, 1964; Feather, 1982; Vroom, 1964), low goal desirability and attainability run counter to individuals' motivation to pursue the goal. This may translate into the delay or avoidance of goal-related activity. Indeed, one defined feature of the action crisis is procrastination (Brandstätter & Schüler, 2013), for which negative effects on performance have been documented (Steel, 2007).

Apart from motivational deficits, the action crisis might demand cognitive resources that, consequently, are not available for goal implementation, accounting for performance deficits (cf. Lyubomirsky, Kasri, & Zehm, 2003; Masicampo & Baumeister, 2011; Mikulincer, 1989). As outlined before, the action crisis is denoted by a questioning of the goal and the renewed balancing of pros and cons (Brandstätter & Schüler, 2013). Its conceptualization as conflict suggests that deliberation does not reach a clear solution, but is resumed repeatedly and takes ruminative forms. As a reassessment of the goal can be initiated by encountering obstacles in goal striving that force individuals to pause (Carver & Scheier, 1990), the action crisis should consume cognitive resources even in the situations in which individuals try to implement their goal. This means that as long as the action crisis prevails –

until the point where the individual either dissipates doubts or decides to abandon the goal – he or she faces the need to (impartially) re-evaluate the pros or cons of goal pursuit *while* keeping up efforts to attain the goal. "Doing the splits" between two conflicting tasks that consume cognitive resources typically results in not being ideally prepared for either of them (Herrmann et al., 2014). On this notion, it has been argued that the action crisis compromises performance on the goal (Brandstätter & Herrmann, in press; Herrmann & Brandstätter, 2015). Reasoning from the consumption of limited cognitive resources, even performance in unrelated tasks may be affected, if worked on concurrently with the experience of action crisis.

Previous studies have provided first evidence for performance impairments in relation to an action crisis. Brandstätter et al. (2013) measured marathon runners' action crisis levels two weeks prior to the run to predict running time as an objective indicator of performance. Individuals with more severe action crises achieved a lower performance in the marathon, controlling for age, body-mass-index, running experience, training, and running-specific physical complaints. Steeper cortisol increases during the run, which may indicate heightened mental and physical strain, partly mediated the link between action crisis and reduced performance (Brandstätter et al., 2013). In the academic domain, university freshmen with higher levels of action crisis with respect to their goal to complete their studies collected fewer ECTS credits in the first academic year (Herrmann & Brandstätter, 2015). The European Credit Transfer and Accumulation System (ECTS) is a standardized performance measurement system in higher education in the European Union and collaborating countries (e.g., Switzerland), specifying that a bachelor's degree in any field requires the acquisition of 180 ECTS credits.

Although these findings offer preliminary evidence that an action crisis is associated with impaired performance, they are not fully conclusive of the action crisis – performance link due to methodological limitations of the correlational approach, which cannot fully rule out the possibility that more severe action crises were experienced by individuals with lower capability, accounting for their performance impairments later on. Moreover, while past research has focused on performance in relation to the goal, potential effects on goal-unrelated performance shown in temporal proximity to the experience of action crisis have not been investigated. Thus, further investigation of the effects of action crises on performance has been expressed as a need for future research (Brandstätter & Herrmann, in press).

The present research

This research tested the hypothesis that higher levels of action crisis predict reduced performance. Based on previous findings, Study 1 aimed to verify that impairments in goal-related performance occur in timely succession of the action crisis, even when prior levels of performance are controlled. As a longitudinal design offers benefit in providing insights about longer term processes that occur in real-life goal striving, but does not allow conclusions about causality, Study 2 was designed to conduct a causal test of our assumptions. Study 2 further diverged from Study 1 in that it studied the hypothesized performance impairments in a task that was content-wise unrelated, but processed in temporal proximity to the experience of action crisis. Therewith, Study 2 trials the assumed predictive effect of the action crisis, and is a clear methodological advancement to prior research (Brandstätter & Herrmann, in press; Brandstätter et al., 2013).

Study 1

Study 1 was conducted in the context of the goal to complete a university degree as a high-level goal that many people pursue in their early twenties. In the pursuit of a study degree, the experience of doubt is common, and study dropout is a relevant phenomenon for individuals and society (Swiss Federal Statistical Office, 2015). A particular advantage of this context of investigation is that, with the university's official academic records, objective and externally valid indicators of goal-related performance are given. We asked participants to authorize the release of their official academic records of three consecutive terms, and calculated for each term the number of ECTS credits they obtained as well as their end-of-term grade point average (GPA). Our expectation was that higher levels of action crisis with respect to one's studies predict lower academic performance, when prior-term ECTS credits or grades, respectively, are controlled. The present study methodologically advances a previous investigation (Herrmann & Brandstätter, 2015) in three ways: First, we considered, aside from the number of ECTS credits collected, students' GPA as arguably most direct indicator of academic performance. Second, we relied on the university's official academic records instead of students' self-report. Third, we controlled for individual prior-term performance levels in all analyses. Combined, these advancements should provide more conclusive evidence that the action crisis predicts performance impairments beyond potentially pre-existing deficits.

Method

Participants and design. We tested our hypothesis using a combined dataset of three samples that were collected within larger research projects on self-regulation and goal pursuit in daily life. All three samples included students of a public Swiss university enrolled in various fields of studies. Participants were recruited via flyers, notice in lectures, advertisements on university billboards, and mailing lists, and compensated financially or with partial course credit. Reasons for combining the samples were twofold. First, study procedures were nearly identical. Within each longitudinal study, participants were asked to release their academic records for three consecutive terms, that is, the term during which the study was conducted, the previous, and the following term. Participants of all three samples reported their level of action crisis with respect to their goal to complete their course of studies at the beginning (Sample A and B) or in the mid of the term (Sample C) and again at the end of the term, shortly before exams took place. Table 4 illustrates the time course for each sample.

Table 4: Overview of Study Procedure for the Three Samples in Study 1

	Action crisis		Academic performance: term		
	T1	T2	previous	data collection	subsequent
Sample A	March	June	WT 2013	ST 2014	WT 2014
Sample B	September	December	ST 2015	WT 2015	ST 2016
Sample C	May	June	WT 2015	ST 2016	–

Note. ST = spring term, WT = winter term.

The second reason for combining the samples referred to insufficient statistical power to detect the effect of an action crisis on academic performance in each of them individually, given that the release of the college academic records was optional. Sample A consists of n = 121 of 157 (77%) participants for whom college academic records were obtained (as students had given their consent, reported a valid student ID, and had taken part in courses that included a performance assessment or at least ECTS credits). Post-hoc power analysis revealed a power of $1 - \beta = .72$ to detect a significant effect in a multiple regression with three predictors ($\alpha = 0.05$) and an effect that we, based on previous findings (Herrmann & Brandstätter, 2015), expected to be small to moderate in size ($f^2 \approx .08$). Sample B includes n = 41 of 118 participants (35%) for whom college academic records were available. Post-hoc

power-analyses revealed a power of 1 - β = .27.[4] In the third study, students' participation was contingent on their agreement to release their academic records. Of 78 participants, 4 gave an invalid student ID. Thus, Sample C consists of n = 74 participants for whom college academic records could be released, implying a statistical power of 1 - β = .49. By merging the three samples to one dataset of N = 236 participants, power strongly increased. The analysis testing the effects of an action crisis on the number of ECTS credits obtained, including 6 predictors, was based on n = 226 participants (missings in one of the variables used resulted in case-wise deletion), which equals statistical power of 1 - β = .90. The analysis testing the effects of an action crisis on students' GPA, including 7 predictors, was based on n = 176 participants, resulting in statistical power of 1 - β = .77.

In the combined sample, mean age was 22.51 years (SD = 3.52) and 197 of 236 participants were female. The three samples did not significantly differ from each other with regard to composition of sex, but marginally significantly differed with respect to participants' age, $F(2, 232) = 2.84$, p = .060. Age differences were small (Sample A: M = 22.56 years, SD = 4.01; Sample B: M = 21.41 years, SD = 2.98; Sample C: M = 23.03 years, SD = 2.78) and including age as covariate in the models did not change the results.

Measures. ***Action crisis.*** Participants' level of action crisis with regard to their goal to complete their study degree was measured with a modified version of the ACRISS-Scale (Brandstätter & Schüler, 2013). The ACRISS-Scale has proven eligible to assess different facets of an action crisis. Items (T_1: α = .78; T_2: α =.80) were answered on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree* in Sample A and C, and on a 7-point scale ranging from 1 = *strongly disagree* to 7 = *strongly agree* in Sample B. Due to diverging answer scales, action crisis scores were z-standardized in each sample before merging the data. In all samples, action crisis was measured twice. The first measurement (T_1) was taken in the beginning (Sample A and B) or in the mid (Sample C) of the term; the second measurement was taken at the end of the term (T_2).

Academic performance. Academic performance was operationalized by two indicators, both extracted from students' official academic records. First, the total number of

[4] In Sample A, participants for whom academic performance indicators could not be requested (n = 34) had significantly higher action crisis levels than participants for whom academic performance indicators were made available, $t(43.96) = 2.65$, p = .011. Although this might limit the generalizability of findings, it need not question the validity of the results obtained, as the restriction of variance in upper action crisis levels might most likely lead to an underestimation of hypothesized effects. In Sample B, action crisis levels differ not between individuals for whom academic performance indicators were available vs. were not available, $t(158) = 0.51$, p = .609.

ECTS credits obtained in all graded as well as ungraded courses was summed. Second, we calculated students' end-of-term grade point average (GPA) by weighting all graded courses on their respective number of ECTS credits and dividing their sum by the overall number of credits that could be achieved in the graded courses. The resulting measure indicates the achieved grade per credit.

Results and brief discussion

Preliminary analyses. Means, standard deviations, and zero-order correlations among the study variables are presented in Table 5. Mean action crisis levels at T_1 (Sample A: M = 2.07, SD = 0.64 on a 5-point scale; Sample B: M = 3.09, SD = 1.35 on a 7-point scale; Sample C: M = 2.26, SD = 0.73 on a 5-point scale) were comparable with those of previously published studies (e.g., Brandstätter et al., 2013; Herrmann & Brandstätter, 2015).

Table 5 suggests that there was a wide range in the number of ECTS credits obtained. However, with a mean of 26 credits, students were on average close to the number of 30 credits recommended per term. Students' mean end-of-term GPA scored at 4.74 with a standard deviation of .87 and a range from 1 to 6 (see Table 5). In Switzerland, 1 indicates the lowest possible performance and 6 indicates the highest possible performance; grades of 4 and above signal that the course has been passed. In line with our hypotheses, zero-order correlations revealed that students with higher levels of action crisis (both at T_1 and T_2) achieved a lower number of credits and a lower GPA in the previous and the current term.

Table 5: Means (SDs) and Zero-Order Correlations in Study 1

Variable	*M*	*SD*	1	2	3	4	5
1. Z-Action crisis T_1			––				
2. Z-Action crisis T_2			.74***	––			
3. ECTS credits prior term	24.41	12.21	–.25***	–.25***	––		
4. ECTS credits current term	26.07	13.53	–.15*	–.19**	–.01	––	
5. GPA prior term	4.77	0.85	–.23**	–.33***	.38***	.23**	––
6. GPA current term	4.74	0.87	–.22**	–.29***	.43***	.33***	.64***

Note. T (in T_1– T_2) = time.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Main analyses. We had hypothesized that higher action crisis levels predict the attainment of a lower number of credits and lower GPA, controlling for academic

performance in the previous term. We tested these hypotheses by means of hierarchical multiple regression analyses in SPSS (version 23). For both performance outcomes (number of ECTS credits obtained and GPA) we proceeded as follows: In Step 1 of the regression models, we included our control variables. First, we controlled for the respective performance indicator (z-standardized) in the previous term to test whether an action crisis predicted performance independent of previous performance. Second, we controlled for differences in study procedures across samples (e.g., whether data was collected in the spring or the winter term) and potentially diverging means in outcome variables by introducing two dummy variables coding the sample (dummy 1: Sample B = 1; dummy 2: Sample C = 1; the largest Sample A was the reference sample). In Step 2, action crisis as the focal predictor was inserted. As we were interested in the *predictive* effects of an action crisis on academic performance, we used the z-standardized action crisis scores of the measurement point with the longer temporal distance to the assessment of performance indicators ($T_{1)}$[5]. In Step 3, we added the two interaction terms between action crisis and type of sample to test whether the effect of an action crisis on academic performance was robust across samples.

ECTS credits. As Table 6 illustrates, the hierarchical regression analysis predicting ECTS credits revealed that the control variables, entered in Step 1, explained 13% of variance in students' number of obtained credits. The number of credits obtained in the previous term marginally significantly predicted the number of credits obtained in the current term. Students of Sample B obtained on average less credits than students in Sample A, while average number of credits did not differ between Sample A and Sample C.

Importantly, including action crisis levels in Step 2 significantly improved the prediction of the model. As expected, students with higher action crisis levels at the beginning of the term collected fewer credits by the end of the term, when number of credits obtained in the previous term was controlled. This analysis based on the total, sufficiently powered sample may give the most reliable estimate of the effect: It suggests that students with action

[5] We also tested our hypotheses with action crisis levels measured at T_2. Analyses revealed that students with higher action crisis levels at T_2 collected significantly fewer ECTS credits, β = -.19, *b* = -2.63, *SE* = 1.25, *t*(204) = -2.11, *p* = .036, controlling for the number of credits obtained in the previous term, type of sample (dummy 1: Sample B = 1; dummy 2: Sample C = 1), and the action crisis by type of sample interactions. The predictive effect of action crisis levels at T_2 on students' GPA achieved failed to reach statistical significance, β = -.17, *b* = -0.15, *SE* = 0.09, *t*(158) = -1.62, *p* = .108, when GPA in the previous term, number of credits obtained in the previous term, type of sample, and the action crisis by type of sample interactions were controlled. Given that the effect went in the expected direction, non-significance might be due to random variation across measurements.

crisis levels one standard deviation above the mean, measured at the rather beginning of the term, collect 1.75 credits less by the end of that term.

The interaction effects between action crisis levels and the dummy variables coding sample entered in Step 3 were both not significant, suggesting that the relationship between action crisis and number of credits obtained was similar across samples. In sum, the analysis suggests that students with higher levels of action crisis collected fewer ECTS credits at the end of the term, controlling for the number of credits they had obtained in the previous term.

Table 6: Hierarchical Regression Analysis Predicting Number of ECTS Credits Obtained in Study 1

Predictor variable	β	*b*	*SE*	*t*	*p*	Δ*F*	*df*	R^2
Intercept		27.48	1.21	22.64	.000			
Step 1						11.31	223	0.13
ECTS credits prior term	.13	1.75	0.94	1.87	.063			
Sample A vs. B	-.35	-12.50	2.57	-4.86	.000			
Sample A vs. C	.09	2.64	1.91	1.39	.166			
Step 2						4.13	222	0.15
ECTS credits prior term	.09	1.21	0.97	1.25	.211			
Sample A vs. B	-.34	-11.95	2.57	-4.65	.000			
Sample A vs. C	.10	2.75	1.89	1.45	.148			
Action crisis T_1	-.13	-1.75	0.86	-2.03	.043			
Step 3						0.28	220	0.15
ECTS credits prior term	.09	1.24	0.98	1.27	.205			
Sample A vs. B	-.34	-11.99	2.58	-4.65	.000			
Sample A vs. C	.10	2.73	1.90	1.44	.152			
Action crisis T_1	-.18	-2.34	1.18	-1.99	.048			
Action crisis T_1 x Sample A vs. B	.03	1.10	2.36	0.47	.640			
Action crisis T_1 x Sample A vs. C	.06	1.30	1.88	0.69	.491			

GPA. Next, we were interested in whether the experience of action crisis predicted a lower GPA beyond possible pre-existing performance impairments, which may have contributed to the experience of action crisis in the first place. As Table 7 shows, Step 1 of the hierarchical regression analysis included the control variables, with which 43% of variance in students' GPA could be explained. Previous term GPA strongly predicted current term GPA. We also included the number of credits obtained in the current term as a covariate in the analysis, as students may (wish to) attain more credits at the expense of the achieved grade

per credit. However, the number of credits obtained only marginally significantly (positively) predicted individuals' GPA.

In Step 2, action crisis levels at T1 were included, and the prediction of the model significantly improved. As expected, higher levels of action crisis significantly predicted a lower GPA achieved by the end of the term, when students' GPA in the previous term, and thus, an indicator of their "typical" performance, was controlled. The analysis suggests that students with action crisis levels one standard deviation above the mean attain a 0.14 points lower end-of-term GPA than students with mean levels of action crisis.

In Step 3, we tested whether the effect of an action crisis on students' GPA was robust across samples by additionally including the two interactions between action crisis and type of sample in the analysis. The first interaction revealed that the relationship between action crisis and GPA was not significantly different based on Sample A and Sample B. The second, marginally significant interaction suggested that the relationship between action crisis and GPA tended to be less negative based on Sample C than based on Sample A. Due to this difference, we ran another regression analysis for the so far missing comparison between Sample B and Sample C. We exchanged the two dummy-coded variables for type of sample. This time, Sample B was the reference (dummy 3: Sample A = 1; dummy 4: Sample C = 1). With otherwise unchanged results, the analysis revealed a marginally significant interaction suggesting that the relationship between action crisis and GPA was less negative based on Sample C than based on Sample B, $\beta = .21$, $b = 0.29$, $SE = 0.15$, $t(169) = 1.89$, $p = .060$, $\Delta R^2 = .02$, $\Delta F(2, 169) = 2.57$, $\Delta p = .079$. In sum, these results suggest that higher levels of action crisis predict lower GPAs based on Sample A and B, but that Sample C deviated from this pattern. Yet, overall, findings suggest that higher levels of action crisis predict lower grades, controlling for previous performance levels as well as current work load (operationalized by the number of ECTS credits students obtained in the current term).

In sum, Study 1 suggests that higher levels of study-related action crisis predict worse performance, indicated by a lower number of credits collected and a lower end-of-term GPA. These performance impairments emerged when prior levels of performance were controlled, suggesting that impairments attributable to an action crisis go beyond potentially pre-existing difficulties that may have invoked the action crisis. Given that Study 1 assessed the experience of action crisis with respect to a personal goal, and relied on a goal-related, valid performance measure, its contribution was to document the relevance of performance effects of an action crisis in real-life goal striving. However, a correlational study prohibits firm

conclusions about causality; therefore, we used a complementary methodological approach in Study 2.

Table 7: Hierarchical Regression Analysis Predicting Grade-Point-Average (GPA) in Study 1

Predictor variable	β	*b*	*SE*	*t*	*p*	Δ*F*	*df*	R^2
Intercept		4.71	0.07	71.66	.000			
Step 1						32.59	172	0.43
GPA prior term	.62	0.50	0.05	10.48	.000			
ECTS credits current term	.12	0.10	0.05	1.87	.063			
Sample A vs. B	.09	0.19	0.13	.1.43	.154			
Sample A vs. C	.08	0.13	0.10	1.34	.182			
Step 2						7.52	171	0.46
GPA prior term	.59	0.47	0.05	9.94	.000			
ECTS credits current term	.11	0.09	0.05	1.74	.083			
Sample A vs. B	.09	0.18	0.13	1.39	.165			
Sample A vs. C	.09	0.14	0.10	1.42	.157			
Action crisis T_1	-.16	-0.14	0.05	-2.74	.007			
Step 3						2.57	169	0.47
GPA prior term	.58	0.47	0.05	9.76	.000			
ECTS credits current term	.11	0.09	0.05	1.75	.082			
Sample A vs. B	.09	0.17	0.13	1.31	.191			
Sample A vs. C	.10	0.16	0.10	1.64	.103			
Action crisis T_1	-.24	-0.20	0.07	-2.85	.005			
Action crisis T_1 x Sample A vs. B	-.04	-0.10	0.15	-0.65	.520			
Action crisis T_1 x Sample A vs. C	.14	0.19	0.10	1.86	.065			

Study 2

Study 2 followed an experimental design to put our assumption to a test that an action crisis causally compromises performance. Furthermore, Study 2 analyzed whether performance impairments may spill over to an unrelated task worked on in temporal proximity to an action crisis. To induce the experience of action crisis, we asked participants to empathize with a student who was described to be in an action crisis (vs. to be confident) with regard to the goal of completing his study degree. Immediately thereafter, participants' performance was measured in a task requiring the efficient implementation of routines. Therewith, we used a procedure similar to that used in studies on mindset theory documenting carry-over effects of

distinct cognitive orientations to subsequent, unrelated tasks (Fujita, Gollwitzer, & Oettingen, 2007; Gollwitzer, 1990; Henderson, Liver, & Gollwitzer, 2008).

Method

Participants and design. Seventy-four (57 female) students (M_{age} = 23.28 years, *SD* = 4.18 years) from a public Swiss university participated in the online-study voluntarily or in exchange of partial course credit. Participants were randomly assigned to conditions of a one-factorial (action crisis vs. control condition) between-subjects design.

Procedure and measures. ***Experimental manipulation.*** To induce the experience of an action crisis, we used a written scenario designed by Brandstätter and Schüler (2013). Participants were asked to read a one-page text and put themselves in the position of the main character. The scenario depicted an episode in the life of a university student that participants were familiar with (i.e., examination period, heavy course load, incompatibility of study and leisure time goals). Depending on experimental condition, the protagonist of the story was described as facing serious difficulties with his studies and considering dropout (action crisis condition) or as confident to finish his degree (control condition).

Manipulation check. After reading the scenario, participants were given time to imagine the thoughts and feelings that would, if they were in the protagonist's place, cross their mind. To check whether our manipulation had been successful, intensity of action crisis was assessed with an adapted version of the ACRISS-Scale (Brandstätter & Schüler, 2013), each item including the prefix "In this situation, I would…" (e.g., "doubt whether I should continue my studies or drop out of university", α = .89). Participants indicated their level of agreement with each of the six items on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. As it is well-known that the action crisis is associated with a specific mindset-shift, as a second manipulation check, we assessed individuals' goal-related mindset. For this purpose, two scales were developed to assess deliberative (7 items; e.g., "I would think about whether my studies really fit my interests", α = .81) and implemental (6 items; e.g., "I would focus on passing the exams", α = .67) thoughts in response to the scenario by asking participants what they would think about in the described situation. Participants indicated their level of agreement on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. If the manipulation was successful, participants in the action crisis condition should report more deliberation than participants in the control condition, while both conditions should report being cognitively concerned with goal implementation.

Performance. Performance was assessed with four blocks of the test "Count Numbers" (Pokorny, 2008), which requires participants to follow a simple rule under time pressure. Within 75 seconds, participants had to count the frequency of ones and sevens in a block of random numbers; this procedure was repeated four times. A response was evaluated as correct if it equaled the true number of ones and sevens in the respective block. Deviations from the true frequency represented errors. We summed the errors to obtain a total error score for each task block.

Control questions. After the performance test, identification with the scenario was assessed with three items (e.g., "It was easy to put myself in the main character's position", α = .66). We also queried how satisfied participants were with their studies ("I am happy with my studies"). Items were taken from Brandstätter and Schüler (2013) and used a 5-point answer scale (1 = *strongly disagree* to 5 = *strongly agree*). Then, participants were thanked and debriefed.

Results and brief discussion

Hypotheses were tested with linear regressions and hierarchical linear modeling. Experimental condition was dummy coded (control = 0, action crisis = 1).

Preliminary analyses. As satisfaction with own studies could affect thoughts in response to the scenario as well as subsequent performance, we verified that there were no significant differences in satisfaction with own studies between conditions, β = -.11, *b* = -.24, *SE* = .26, *t*(70) = -.94, *p* = .349. Moreover, participants of both conditions were equally able to identify with the scenario presented to them, β = .06, *b* = .08, *SE* = .15, *t*(70) = .53, *p* = .600, suggesting that scenarios were equal with regard to emotional involvement. Mean action crisis was higher in the action crisis than in the control condition, β = .63, *b* = 1.22, *SE* = .18, *t*(72) = 6.94, *p* < .001, indicating the success of our manipulation. We also tested whether conditions differed with regard to the amount of deliberative and implemental thought content. Therefore, we regressed implemental and deliberative mindset separately on experimental condition. As displayed in Figure 6, participants of both conditions reported a comparable amount of implemental thoughts, β = -.13, *b* = -.17, *SE* = .15, *t*(72) = -1.11, *p* = .271. However, the amount of deliberative thoughts was significantly higher among participants in the action crisis than in the control condition, β = .49, *b* = .74, *SE* = .16, *t*(72) = 4.77, *p* < .001. These results are consistent with previous findings that in an action crisis, the focus on goal implementation is mingled with a resurgence of deliberative thoughts.

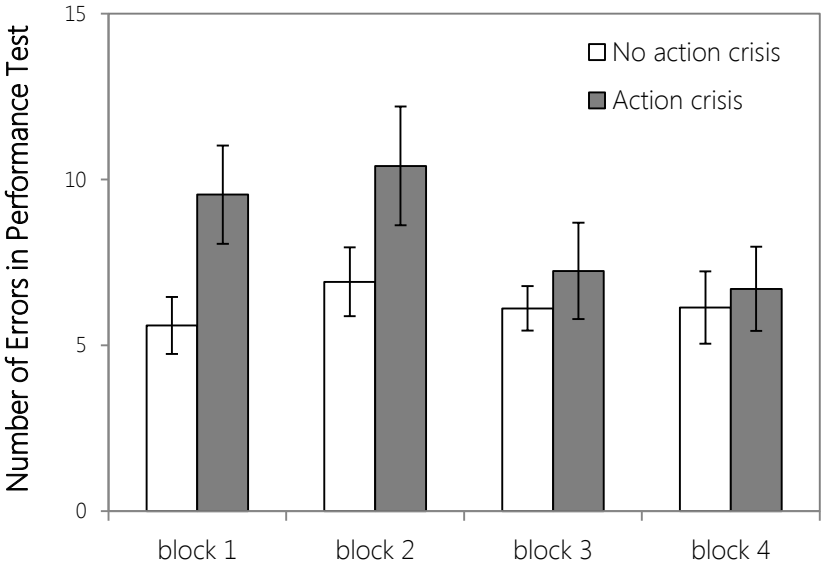

Figure 6: Number of errors in the performance test depending on experimental condition in Study 2. Error bars represent standard errors.

Main analyses. To analyze possible performance impairments in the action crisis, we had presented individuals with four blocks of a cognitive test, which constitutes a repeated measure. To acknowledge the dependency of observations, we used hierarchical linear modeling (HLM), which captures correlations among repeated observations by introducing random effects (Bauer et al., 2006). Our random intercept model consisted of two levels of variance, with one predictor on each level: Number of task block (centered at the first block: 0 – 3) was entered as a predictor on trial-level (Level 1). Experimental condition (control = 0, action crisis = 1) was entered as a predictor on participant-level (Level 2). Because changes in performance over task blocks might also depend on experimental condition, we included a cross-level interaction between experimental condition and number of task block. We estimated the model in R (version 3.1.1; R Core Team, 2014) with the multilevel package (Bliese, 2013) using maximum likelihood estimation.

Results are presented in Table 8 and illustrated in Figure 6. The intercept of the model represents mean performance across all task blocks when experimental condition is zero (i.e., when participants are in the control condition). The main effect for the trial level variable number of task block did not reach statistical significance, indicating that, across experimental conditions, performance did not vary between task blocks. The expected main effect for experimental condition was significant, suggesting that individuals in the action crisis condition (vs. control condition) made more errors, and hence showed lower performance.

The interaction term between condition and number of task block was also significant. Using Preacher, Curran, and Bauer's (2006) online tool for probing HLM 2-way interactions, we found that in the first task block, participants in the action crisis condition made significantly more errors than participants in the control condition, $b = 4.16$, $SE = 3.26$, $z = 3.26$, $p = .001$. This difference between conditions was still significant in the second task block, $b = 2.91$, $SE = 1.12$, $z = 2.61$, $p = .009$, but vanished in the third, $b = 1.66$, $SE = 1.41$, $z = 1.17$, $p = .241$, and in the fourth task block, $b = 0.41$, $SE = 1.97$, $z = 0.21$, $p = .837$. Descriptively, action crisis participants' performance approached control participants' performance over the course of the four task blocks. However, the change in error rate over time was not significant both in the action crisis condition, $b = -1.17$, $SE = 0.80$, $z = -1.45$, $p = .146$, and the control condition, $b = 0.08$, $SE = 0.64$, $z = 0.13$, $p = .896$. The observed pattern of results may suggest that performance impairments of participants in which the experience of action crisis had been induced vanished over task blocks and with increasing temporal distance to the experimental manipulation.

Table 8: Random Intercept Model Predicting Error Scores in Study 2

					CI_{95}	
Fixed effects	*b*	*SE*	*t*	*p*	*lower*	*upper*
Intercept	6.07	1.15	5.26	.000	3.79	8.34
Number of task block (Level 1)	0.08	0.41	0.21	.838	-0.72	0.88
Condition (Level 2)	4.16	1.63	2.55	.013	0.91	7.41
Condition x number of task block	-1.25	0.57	-2.20	.029	-2.37	-0.13
Random effects	Est					
Residual (Level 1)	5.41				4.92	5.95
Intercept (Level 2)	5.33				4.33	6.55
Model fit	Est					
ICC	.49					
AIC	1921.93					
BIC	1943.86					
-2 log likelihood	-954.96					

Note. B = unconditional model estimate, *SE* = standard error, Est = estimate, CI = confidence interval, AIC = Akaike Information Criteria, BIC = Bayesian Information Criteria. Condition is coded: control = 0, action crisis = 1. Results are based on 74 participants and 290 observations.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Taken together, in line with the hypothesis, Study 2 provided evidence of a causal, performance detrimental effect of the action crisis on a temporally close, even if unrelated task. The effect was significant for the first two task blocks; the pattern remained constant across the following blocks but became weaker and non-significant. This might result from our subtle induction of the action crisis, which was done by scenario and may have produced rather weak effects that faded over time and with individuals getting increasingly absorbed by the demands of the current task.

Discussion

When recurrent obstacles in goal striving make goal attainment unlikely or unduly troublesome, individuals may enter a phase in which further striving for the goal is called into question. In an action crisis (Brandstätter & Schüler, 2013), initial doubts have developed into a decisional conflict, in which the individual is torn between the opposing options of holding on to the goal and letting it go. The present studies document detrimental effects of an action crisis on individuals' performance. Both when the experience of an action crisis was experienced with respect to a personal goal as well as when it was experimentally induced, consistent evidence for subsequent impairments in performance was found.

The present research benefits from two different methodological approaches that complement conclusions that can be drawn. Study 1 illustrated that the action crisis predicts performance impairments measured with temporal distance in real life goal pursuit. Study 2 suggests a causal, immediate effect of the action crisis that may transfer to an unrelated task. The predictive effects of the action crisis are particularly noteworthy as both studies used objective measures instead of subjective estimates of performance, which means that reported effects are not overestimated due to a common method that was used (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). A further strength of this research lies in the high relevance of the performance indicator used in Study 1. University grades tend to be regarded as indicative of students' ability and motivation, and are often used, for instance, by employers, to predict occupational success (for reviews on their actual predictive effects, see Roth, BeVier, Switzer, & Schippmann, 1996, Roth et al., 1996; Roth & Clarke, 1998). Thus, results of Study 1 illustrate that the action crisis has impedimental effects for an outcome that is not only subjectively relevant, but highly noticed and valued in our society.

A weakness of the present research is that we studied only one personal goal (i.e., completing a study degree), what limits conclusions about the universality of the effect.

Future research is warranted to address whether action crises compromise performance also in completely different goal domains (e.g., health, sports, or relationships); this, however, will imply the methodological challenge to operationalize performance in a meaningful and interindividually comparable way.

A further limitation is that we cannot tell with certainty *why* the action crisis leads to impaired performance. As outlined in the introduction, both motivational deficits as well as cognitive load due to competing demands (deliberation *and* implementation) are potential candidates to account for it. Motivational deficits are very unlikely to explain findings of Study 2, given that the action crisis was experimentally induced and performance assessed in a thematically unrelated task. Rather, experiencing an action crisis might have had effects on information processing (potentially due to cognitive load) that still endured when individuals worked on the following task. Possibly, cognitive load likewise accounted for lower academic performance among students experiencing an action crisis in Study 1; however, it is also possible that it was a combination of processes or motivational deficits alone that predicted performance impairments in this context. It would be important for future studies to explicitly test these underlying mechanisms. Experience-sampling designs, in which individuals report on their goal-related behavior while engaging in it, might be especially worthwhile to conduct.

In the context of the goal to complete a university degree, we would assume that the action crisis affects students' studying. Studying is one of the major variables (and even outdoes IQ) in predicting academic performance (Duckworth & Seligman, 2005), so performance deficits should be definitely associated with it. Starting from the assumption that deliberation inhibits goal-directed activity (Armor & Taylor, 2003; Brandstätter & Frank, 2002), it would be interesting to investigate to what extent deliberation associated with the action crisis is experienced as cognitively interfering with studying. Beyond that, students with more severe action crises might have more difficulty shielding their studying activity from distractions (e.g., social media, snacking, house cleaning), which may be an expression of reduced goal shielding (Gollwitzer & Sheeran, 2006) as predicted by the mindset-shift (Brandstätter et al., 2013; Brandstätter & Schüler, 2013). Finally, a higher amount of study-related procrastination might underlie these students' reduced academic performance later on.

We have not discussed until now the possibility that an action crisis might also lead to increased performance in some situations or circumstances. While we do not expect this for overall performance measured on the obstructed goal or performance on tasks that are processed in temporal closeness to the experience of motivational conflict (as studied in this

research), increased performance might result when individuals currently do not feel cognitively taxed by the action crisis and interpret a situation as an opportunity to compensate prior shortcomings. We based this prediction on findings that failure in self-defining tasks (i.e., personal goals) can lead to increased performance in subsequent tasks if they are regarded as relevant to a self-definition (Brunstein & Gollwitzer, 1996). Thus, moderating variables for the action crisis – performance link, like the context of performance measurement, features of the goal, for instance goal commitment (Brunstein & Gollwitzer, 1996), or traits known to influence performance following failure, for instance action- vs. state-orientation (Brunstein & Olbrich, 1985) or narcissism (Nevicka, Baas, & Ten Velden, 2016), should be identified in future research.

What the present studies, nevertheless, suggest is that there are contexts where doubting impairs acting. Our findings further provide first evidence that an action crisis may radiate to other life domains and negatively impact performance there; this might be the case when people ponder about whether to hold on to or withdraw from an obstructed goal (e.g., a romantic relationship) while being engaged with the pursuit of another (e.g., a university degree). An examination of the action crisis with respect to a hierarchically high-standing goal within the individual's larger goal system seems as an interesting avenue for future research.

The present research may contribute to our understanding of the disengagement process from personal goals. In previous studies, it was shown that an action crisis predicts a devaluation of the goal's desirability and attainability, and low appraisals of these motivational features, in turn, predict an increase in action crisis over time (Brandstätter et al., 2013; Ghassemi et al., 2017). It was concluded that a dynamic interplay between feelings of doubt and changing goal appraisals may shape and define the disengagement process from personal goals (Ghassemi et al., 2017). The present research adds that an action crisis not only affects individuals' goal appraisals but also the measurable outcomes of their goal pursuit. By compromising subsequent performance, an action crisis may lead individuals out of the zone of conflict and closer to the point where nothing is left but to abandon the goal. Although, to date, several changes in cognition, affect, physiology, and behavior have been identified to accompany the action crisis (Brandstätter et al., 2013; Brandstätter & Schüler, 2013; Ghassemi et al., 2017; Herrmann et al., 2014; Herrmann & Brandstätter, 2015), it will be an endeavor for further research to connect these simultaneously operating processes and provide a better understanding of their dynamic interplay.

Although disengagement is a wise response if a goal is not attainable, tenacity is beneficial if chances are still given to attain a valued goal. As long as the individual upholds his/her hopes to achieve the goal, he/she should know that experiencing an action crisis may be obstructive to reaching it. As the emergence of an action crisis might be irrevocable and of adaptive value in many instances (Brandstätter & Herrmann, in press), we may derive the recommendation that individuals should not remain in a state of action crisis for too long. This means that, albeit difficult, research at some point will have to take up the challenge to identify strategies that help individuals to know when it is time to hold, and when it is time to fold (Brandstätter & Herrmann, in press).

PART III

Questioning a Goal Poses a Threat to the Self

Effects of an Action Crisis on Self-Evaluation, Affect, Physiology, and Performance

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Abstract

Does questioning a personal goal threaten an individual's self-integrity? In two studies, we investigated the self-threatening potential of an action crisis, in which individuals feel torn between further goal pursuit and disengagement. Frequentist and Bayesian analyses showed that merely reflecting on a goal about which an action crisis is experienced (vs. an unobstructed goal) led to more negative affect and less positive self-worth. Individuals having reflected on an action crisis expressed lower performance expectations for an upcoming cognitive task, what, in turn, predicted lower performance. There was preliminary evidence that individuals with more severe action crises might have higher physiological arousal (skin conductance level reactivity) when thinking about their goal, controlling for dispositional self-esteem and neuroticism. However, support for the alternative relative to the null hypothesis was weak, pointing to the need of replication. Implications of the conceptualization of an action crisis as self-threat are discussed.

Introduction

When asked about who they are or what defines them as a person, people often talk about their goals. Defined as the "consciously articulated, personally meaningful objectives that individuals pursue in their daily lives" (Elliot, Chirkov, Kim, & Sheldon, 2001, p. 505), personal goals were identified as fundamental units in the study of human behavior (Emmons, 2003). They give purpose and structure to life, and are considered as part of individuals' self-concept and -definition (Wicklund & Gollwitzer, 1981). People spend a significant part of their day working towards their goals, and the (lack of) progress they achieve when striving for their aspirations affects their cognitive preoccupation as well as their well-being (Brunstein, 1993; Emmons, 2003).

Due to the high relevance of personal goals, studies find that the inability to reach a valued end causes negative feelings (Carver & Scheier, 2005; Wrosch et al., 2007). In the research reported here, we build on this knowledge and argue that even being confronted with potential goal failure has negative implications for an individual's sense of self. Although the notion of threatened self-concerns lies at the heart of research on entrapment or escalation of commitment, where it is used to explain why people fail to give up futile endeavors (Brockner, 1992; Staw, Sandelands, & Dutton, 1981), to date, it has rarely been verified empirically (for an exception, see Zhang & Baumeister, 2006). In the here reported research we focused on the self-threatening potential of an action crisis, a phase in goal striving in which the abandonment of a goal has just become an option (Brandstätter & Schüler, 2013; Herrmann & Brandstätter, 2015).

The action crisis: Crossroads between further goal pursuit and disengagement

If an individual encounters serious obstacles in goal striving or the goal loses its appeal, further engagement to achieve the goal may be turned into question. If higher order goals are at stake, raising the question whether to continue goal pursuit or give up the goal may result in a decisional conflict between the opposing options of holding on and letting go; a critical phase that has been termed an action crisis (Brandstätter & Schüler, 2013). The experience of conflict is thought to result from the fact that both options have benefits and costs, and the individual has to anticipate which course of action will turn out advantageous. The high uncertainty surrounding this decision and the irreconcilableness of the available options to either abandon the goal, or resume it with increased efforts often cause the action crisis to

persist over a long time, even if recognized as an issue to be resolved (Herrmann & Brandstätter, 2015).

In line with its conceptualization as conflict, studies have shown that the action crisis is associated with negative affect and predicts reductions in psychological and physical well-being (Brandstätter et al., 2013). Also impairments in goal-related performance have been shown to result from an action crisis: Students with more severe action crises regarding their goal to complete their study degree collected fewer ECTS-credits and achieved a lower grade-point average (GPA) at the end of the term, controlling for prior-term performance levels (Ghassemi, Bernecker, Herrmann, Wolf, & Brandstätter, in preparation; Herrmann & Brandstätter, 2015). In the sports domain, runners with higher levels of action crisis two weeks prior to a marathon achieved a lower performance in the race, when training, experience, age, body mass index, and physical complaints were controlled; this was partly mediated by their steeper increases in cortisol, a concomitant of mental and physical strain, measured repeatedly during the run (Brandstätter et al., 2013). First evidence suggests that even performance on goal-unrelated tasks can be impaired, when individuals work on them in temporal closeness to experiencing an action crisis (Ghassemi et al., in preparation).

In this research, we aimed to consolidate existing and new findings on the action crisis and subsume them under a new theoretical perspective. In line with the view that "the self is partly made up of the person's goals" (Carver & Scheier, 2005, p. 528) we suggest that experiencing an action crisis poses a threat to an individual's self. In our view, evidence for this notion would advance the understanding of the characteristics and difficulties of this critical phase in goal striving.

The threatened self

Comparing the action crisis to a self-threat requires us to think about what this state implies. The self is thought to be composed of different domains, including the person's social roles, values, belongingness to groups (e.g., in terms of age, gender, culture, politics) and, importantly, his or her life goals (Sherman & Cohen, 2006). It is known that humans are motivated to maintain a positive view of themselves and want others to share this view (Leary, Tambor, Terdal, & Downs, 1995; Sedikides, 1993; Steele, 1988). The intended "sense of global efficacy, an image of oneself as able to control important adaptive and moral outcomes in one's life" has been denoted as self-integrity (Cohen & Sherman, 2014, p. 336; Sherman & Cohen, 2006; Steele, 1988).

Self-integrity can be put into jeopardy by outcomes and experiences that, in the individual's belief, convey undesirable diagnostic information about the self (Crocker & Wolfe, 2001). If self-diagnostic experiences in relevant domains are negatively toned, the sense of self-integrity is *threatened*. Although the resulting state of threat is rarely explicitly described and has more often been defined operationally than conceptually (Campbell & Sedikides, 1999), it is regarded as an uncomfortable and aversive one (Han, Duhachek, & Rucker, 2015).

One of the most central indications of self-threat is negative self-evaluation (Crocker, Karpinski, Quinn, & Chase, 2003; James, 1890), which in intensity often exceeds what should be expected based on the significance of the threat. The self is a fluid system, in what is included varies from moment to moment (Critcher & Dunning, 2014). As threats have the characteristic to constrict and hold attention (Koster, Crombez, Verschuere, & Houwer, 2004; Park & Kitayama, 2014), the accessible subset of the self becomes narrowed to the affected domain. Accordingly, conclusions prompted by the threat often loom disproportionately large and may dominate the evaluation of the self (Critcher & Dunning, 2014). Apart from negative self-evaluations, the experience of threat is accompanied by negative affect, arousal, and stress (Gruenewald, Kemeny, Aziz, & Fahey, 2004). Negative affect and psychological stress occur in concert with physiological stress, indicated, for instance, by increased levels of cortisol or proinflammatory activity (Dickerson, 2008; Dickerson, Gruenewald, & Kemeny, 2009). It has been noted that "Like a distracting alarm, psychological threat can consume mental resources that could otherwise be marshaled for better performance and problem solving" (Cohen & Sherman, p. 335). Impressive evidence comes from the academic domain, where students about whom a negative performance related stereotype exists achieve lower grades in school, impeded by the threat of being judged according to the stereotype (Steele & Aronson, 1995).

What makes an action crisis threatening?

We think that an action crisis may be self-threatening for at least four reasons. The first is the experience of failure in goal striving. A phase in which further adherence to the goal is called into question only arises after setbacks have accumulated to an extent that favorable outcome expectancies cannot be maintained despite the shielding function of the implemental mindset (Gagné & Lydon, 2001; Heckhausen & Gollwitzer, 1987; Taylor & Gollwitzer, 1995). The inability to master important outcomes in one's life is thought to threaten self-integrity (Steele, 1988), why many studies operationalize self-threat by inducing

failure (Campbell & Sedikides, 1999; Fein & Spencer, 1997; Gollwitzer, Marquardt, Scherer, & Fujita, 2013; Legault, Al-Khindi, & Inzlicht, 2012; Zhang & Baumeister, 2006). Thus, one reason the action crisis should be threatening is the repeated failure giving rise to it.

Besides failure arising from goal pursuit, also the option of goal abandonment is often connoted with negative evaluation. People may be reluctant to turn away from failing goals because giving up has a bad reputation in Western thought (Wrosch et al., 2013). Indeed, whole research traditions on phenomena like *entrapment or escalation of commitment* suggest that people often fail to give up apparently futile endeavors, because of the negative implications this would have for their sense of self. Specifically, these approaches assume that individuals choose to invest more resources into a failing course of action in order to justify their prior decisions to start that action altogether (Aronson, 1968; Brockner, 1992; Brockner, Rubin, & Lang, 1981; Staw, 1981).

Whereas one motivation in an action crisis may include not admitting wrong decisions in the past, further challenge should stem from the need to make a decision *in the present* that withstands future evaluation. Finding oneself in a situation where one has to find a balance between not letting go the goal too easily and not wasting precious resources by hanging on to it at all cost, an action crisis often is experienced as a dilemma (Herrmann & Brandstätter, 2015). It is known that decisional conflicts can be stressful, and provoke anxiety, agitation, and anticipated regret (Gilovich & Medvec, 1995; Janis & Mann, 1967; Simonson, 1992; van Harreveld, Rutjens, Rotteveel, Nordgren, & van der Pligt, 2009, van Harreveld et al., 2009; van Harreveld, van der Pligt, & de Liver, 2009; Zeelenberg, 1999). Several factors that complicate decision making come to play in an action crisis: ambivalence about or similar value of the available options, outcome uncertainty (van Harreveld et al., 2009; Zeelenberg, 1999), personal accountability for and/or irreversibility of the decision, which at times set the course for an array of subsequent events (Lerner & Tetlock, 1999).

Finally, as goals are closely tied to an individual's incentive system, cognizance that one will not be able to achieve the desired end leads to sadness and disappointment, and if no alternatives are present, the individual may end up with empty hands (Wrosch et al., 2003). Besides having to realign one's everyday life following the cessation of goal pursuit, having to abandon a goal that is closely tied to one's identity is difficult (Brandstätter & Herrmann, in press; Brandstätter et al., 2013; Brandtstädter & Rothermund, 2002; Klinger, 1975; Wrosch et al., 2003). Disengagement, therefore, not only involves the cessation of behavioral attempts to reach the goal, but also the relinquishment of commitment and a reorganization of the self-concept in at least one aspect (Wrosch et al., 2003).

The present research

The aim of the present research was to test whether an action crisis, in which individuals profoundly question a goal to which they are committed, poses a threat to the self. The two studies we conducted, one correlational and one experimental, used an idiographic goal approach. After asking participants to thoroughly reflect on a personal goal that was or was not marked by the experience of action crisis, we assessed several indicators of self-threat. Specifically, we assessed individuals' self-evaluation and affective experience in both studies, and added measures of physiological stress and cognitive performance in Study 2. Our hypothesis was that individuals with higher (vs. lower) levels of action crisis and individuals in the *action crisis* (vs. *no action crisis*) condition would, immediately after reflecting on their goal, experience increased self-threat – indicated by less positive self-evaluation, more negative affect, and reduced cognitive performance. We further expected that they would have increased physiological arousal while pondering about their goal, reflecting increased stress.

Due to the many significance tests we conducted and the potential inflation of α-errors, we complemented conventional tests with a Bayesian analysis approach, with which an infinite number of hypotheses grouped in a family can be tested. Further advantages of Bayesian analyses are that no pre-defined stopping rule in data collection and no a priori hypotheses are needed (Dienes, 2011). Most importantly, whereas significance tests tell the probability of data under a null hypothesis, Bayesian analyses compare the probability of competing hypotheses being true (null hypothesis vs. alternative hypothesis) given the data (Dienes, 2011; Ullrich, Krueger, Brod, & Groschupf, 2013; Wagenmakers, 2007). The Bayes factor (BF_{10}) is a frequently used statistical index that quantifies the strength of evidence for the alternative compared to the null hypothesis (Dienes, 2011; Rouder, Speckman, Sun, Morey, & Iverson, 2009). A BF_{10} of 2, for example, indicates that data is twice as likely under the alternative than the null hypothesis. The recommendation has been made that for BF_{10} between 0.33 and 3, prior beliefs should not, or only very cautiously, be updated because evidence for or against the null hypothesis is weak (Jeffreys, 1961). A BF_{10} above 3 (below 0.33), by convention, indicates substantial evidence in favor of (against) the alternative hypothesis. A BF_{10} above 10 (below 0.10) is regarded as strong evidence in favor of (against) the alternative hypothesis (Jeffreys, 1961). Bayesian analyses were conducted in JASP (JASP Team, 2016) using an uninformed prior, meaning that the null model and alternative model were given equal prior probability. Frequentist analyses were conducted in SPSS.

Study 1

Study 1 used a correlational approach to test whether individuals with higher levels of action crisis with respect to a defining personal goal experience increased levels of self-threat after reflecting on that goal.

Method

Participants. One hundred fifty-four individuals (108 women; M_{age} = 27.96 years, SD_{age} = 10.00 years, 88 studying, 60 employed, 6 "other") were recruited via a department participant pool and social networks and participated in the study online for partial course credit.

Procedure and measures. After an introduction about what we mean by "personal goals", participants were given time to think of the goals they currently pursued (e.g, completing a study degree, entering or maintaining a relationship). Then, subjects were asked to select one goal that was important to them and currently took much of their time. It was noted that it could either be a goal in whose pursuit they made good progress, or a goal, in whose pursuit they repeatedly experienced setbacks, why they considered disengaging from it. After selecting a goal, participants were asked to write an essay to make goal-related experiences salient. We provided them with auxiliary questions to be addressed in the essay: a) how goal striving proceeded recently, b) what thoughts came to their mind when they were reminded of their goal, and c) what thinking about their goal made them feel. Subsequently, levels of action crisis were assessed with the Action Crisis Scale (ACRISS; Brandstätter & Schüler, 2013), which includes six items to assess different aspects constitutive of intrapsychic conflict (e.g., "I doubt whether I should continue pursuing my goal or disengage from it", α = .77, 1 = *strongly disagree* to 5 = *strongly agree*).

Immediately afterwards, participants reported their momentary self-worth, their self-concept clarity, and their current affect. Measures are presented in the following.

Self-evaluation. Two measures were included to assess individuals' self-evaluation. The first was a scale measuring momentary self-worth by means of 14 statements about the self; for our purpose, items were translated into German (Critcher & Dunning, 2014). Participants were asked to indicate "how well each statement characterizes how you feel about yourself right now" (1 = *not at all*, 9 = *extremely*). In the original study, 8 items loaded on the factor *positive feelings of self-worth* (e.g., "Overall, I feel positively toward myself right now") and 6 items loaded on the factor *negative feelings of self-worth* (e.g., "I currently

feel humiliated"). As the two subscales were highly correlated (r = -.77), we recoded items for which high scores indicate negative feelings of self-worth and collapsed all items into one scale of high internal consistency (α = .96).

Second, the extent to which participants had a clear view on themselves, their defining values and preferences, was assessed with a newly developed pictorial measure. Self-concept clarity has been identified as a concomitant of the evaluative component of the self (Campbell, 1990), with low self-regard typically involving large parts of uncertainty, instability, or inconsistency (Campbell et al., 1996). The measure consisted of five circles that became more and more blurred from one circle to the next; participants' task was to mark the circle that best described how clearly they saw their defining values, goals, and preferences. We recoded the item such that higher values represent higher self-concept clarity.

Affect. Affect was measured with 30 items of the extended version of the Positive and Negative Affect Schedule (PANAS-X; Watson & Clark, 1999) translated into German (Röcke & Grühn, 2003). Sample items are happy, jittery, downhearted, strong, and determined. Participants were asked to indicate to what extent they felt this way right now (1 = *not at all*, 5 = *extremely*). We recoded negative items before calculating a mean score with higher values representing more positive affect (α = .94).

Results

Table 9 presents means, standard deviations, and zero-order correlations between action crisis and indicators of self-threat. As expected, individuals who had thought about a goal about which they experienced higher levels of action crisis reported less positive feelings of self-worth, had a less clear view on their defining values and preferences, and experienced more negative affect. All three BF_{10}s were above 100. By convention, BF_{10}s of this size are interpreted as decisive evidence for the alternative hypothesis (Jeffreys, 1961).

Table 9: Descriptives and Pearson Correlations Between Action Crisis and Indicators of Self-Threat in Study 1

Variable	*M*	*SD*	$r_{action\ crisis}$	*p*	BF_{10}
Action crisis	2.48	0.74			
Feelings of self-worth	6.59	1.58	–.68	< .001	9.73e +27
Self-concept clarity	3.91	0.94	–.59	< .001	7.20e +16
Positive affect	3.79	0.63	–.68	< .001	1.27e +28

Note. BF_{10} = Bayes factor to quantify evidence for the alternative hypothesis relative to the null hypothesis. For all tests, the alternative hypothesis specifies that the correlation is negative.

Brief discussion

Findings of Study 1 suggest that experiencing an action crisis may be self-threatening. Individuals with higher levels of action crisis felt less good about themselves, had less self-concept clarity, and experienced more negative affect immediately after reflecting on their goal. However, as conclusions about causality cannot be drawn in a correlational study, the possibility remains that individuals with dispositionally low self-regard questioned their goals to a stronger extent, or were more likely to spontaneously think of an obstructed goal. To thwart these alternative explanations, we used an experimental design in Study 2.

Study 2

As reliance on personal goals seemed to be a precondition for an adequate test of our hypothesis, we implemented the experimental design in Study 2 by asking participants to reflect on personal goal striving that was characterized by the experience of action crisis (*action crisis* condition) or that was pursued without notable doubt (*no action crisis* condition). Still, our assumption was that reflecting on a goal about which individuals were in an action crisis (vs. were not in an action crisis) would lead to increased levels of self-threat.

We included several additional measures to assess self-threat. First, we assessed individuals' implicit self-esteem to investigate how far-reaching the effects of an action crisis on self-evaluation are. Second, given that self-threat is often described as an aversive state of arousal and agitation (Staw et al., 1981), we assessed subjects' electrodermal activity (EDA). EDA is the change in electric properties of the skin as a result of sweat secretion (Lajante,

Droulers, Dondaine, & Amarantini, 2012; Sequeira, Hot, Silvert, & Delplanque, 2009) and reflects changes in activation in response to affective experience (Boucsein et al., 2012). We were interested in the tonic level of electrical skin conductivity, an often used indicator of sympathetic nervous system arousal (Boucsein et al., 2012), which is susceptible to threat (Bohlin, 1976). Specifically, we tested whether the change in skin conductance levels from baseline to the time when individuals reflected on their goal was higher in the *action crisis* than in the *no action crisis* condition. This would indicate increased agitation when being exposed to a goal about which an action crisis is experienced.

Third, as performance impairments have been identified as consequence of threat (Steele & Aronson, 1995), we intended to replicate the finding that experiencing an action crisis can impair performance not only on the goal, but also on tasks processed in temporal proximity (Brandstätter et al., 2013; Ghassemi et al., in preparation; Herrmann & Brandstätter, 2015). This may be explained by the action crisis consuming cognitive resources that consequently cannot be devoted to the ongoing task. As increased mental strain may be expressed in physiological arousal, we tested it as a mediator for the effect of an action crisis on performance. Such a finding would be consistent with a previous study (Brandstätter et al., 2013), and extend it to a broader goal context. Consistent with the notion of the action crisis as constituting a threat to the self, one could also expect that experiencing an action crisis decreases confidence in one's capacity to master upcoming tasks, which may translate into performance impairments (Bandura, 1993; Stajkovic & Luthans, 1998). To test this possibility, we queried individuals' performance expectations prior to the task.

Method

Participants and design. One hundred sixty-six individuals (125 women; M_{age} = 25.74 years, SD_{age} = 6.64 years), mainly students (38 psychology majors) from a public Swiss university, took part in the experiment for monetary compensation (approximately $15) or partial course credit. They were recruited via a department participant pool and advertisements on university boards, and tested in individual laboratory sessions. Two subjects registered for the experiment twice. We excluded data of their second participation from all analyses. The study was approved by the local ethical committee and informed consent obtained from all participants.

Procedure and measures. As part of participants' online registration to the study, we assessed two traits that we expected to influence the amount of self-threat. First, dispositional self-esteem was assessed with a revised German version of Rosenberg's (Rosenberg, 1965)

self-esteem scale (Collani & Herzberg, 2003), consisting of 10 items (e.g., "On the whole, I am satisfied with myself", 1 = *strongly disagree*, 4 = *strongly agree*, α = .87). Second, neuroticism was measured with a German short version of the NEO-FFI subscale (Borkenau & Ostendorf, 2008), consisting of 6 items (e.g., "I often feel inferior to others", 1 = *strongly disagree*, 5 = *strongly agree*, α = .83).

The main part of the study took place several days after this pre-assessment. After being greeted by the experimenter, participants completed the study at the PC to prevent demand effects (only the writing task was assessed paper-pencil; instructions were given online). Subjects randomly assigned to the *action crisis* condition were asked to name a personal goal, which had repeatedly given rise to difficulties and/or lost part of its appeal, why they considered disengaging from it. It was stressed that participants should still be in doubt about whether to hold on to or give up the goal and not have made a decision yet. Participants randomly assigned to the *no action crisis* condition named a personal goal they pursued with good progress, why they were confident and motivated to attain it. It was stressed that participants should still be pursuing the goal and not have reached it yet. After selecting the goal that best fit instructions, participants reported the area of life their goal stemmed from (e.g., social relationships, education/job, leisure).

To strengthen the experimental manipulation, participants in the *action crisis* condition described in a written essay a) why they originally had decided to pursue their goal and what the goal had meant to them back then, b) the difficulties or doubts they experienced in goal striving, c) the thoughts and feelings that came to their mind when confronted with the question whether to stick to or to abandon the goal, and d) what abandoning the goal would mean to them. Participants in the *no action crisis* condition described a) why they had originally decided to pursue their goal and what it meant to them, b) the action steps they intended to take next with regard to their goal, c) the thoughts and feelings that came to their mind when thinking about their goal, and d) what reaching the goal would mean to them. Goal-related action crisis levels were assessed with the ACRISS-Scale (α = .78).

Then, participants worked on the dependent measures presented in the following.

Self-evaluation. Apart from feelings of self-worth (α = .92) and the measure of self-concept clarity used in Study 1, we applied the self-esteem Implicit Association Test (IAT; (Greenwald & Farnham, 2000) to assess individuals' automatic association of self with positive and negative valence. The task version from the Millisecond Test Library was slightly adapted and translated into German. In a total of seven task blocks, participants had to categorize, by pressing a left or right key as fast and accurately as possible, a word (e.g., me

vs. you, lovely vs. painful) presented in the middle of the computer screen. Categories (self vs. other, pleasant vs. unpleasant) appeared in the left and right upper corner of the screen. The IAT compares response latencies to different kinds of category pairings. Latencies are regarded as indicative of the strength of a person's automatic association between mental representations, with faster responses indicating stronger associations. Of interest in the self-esteem IAT is to what extent individuals show faster responses when the self is paired with positive valence compared to negative valence; a higher positive difference in mean latency is interpreted as higher implicit self-esteem (Greenwald & Farnham, 2000). For analyzing IAT data, which was available for 160 participants, we relied on the improved algorithm, which includes practice trials in the analysis, implements error penalties, and uses individual standard deviations in latencies as scale units (Greenwald, Nosek, & Banaji, 2003).

Affect. Current affect was assessed with a modified 9-point version of the Self-Assessment-Manikin scales (Suk, 2006). The SAM is a pictorial measure that captures the valence, arousal, and power component of people's affective reactions (Bradley & Lang, 1994). For all three dimensions, individuals marked on a series of nine pictures the one that illustrated best how they felt right now (1 = *very sad / calm / helpless*, 9 = *very happy / agitated / strong*).

Physiological arousal. Electrodermal activity was assessed with two electrodes (constant voltage 0.5 V) placed on the thenar and hypothenar eminences of the palm of subjects' non-dominant hand. Following recommendations of Boucsein et al. (2012) and Lajante et al. (2012), we used sintered disposable (10 mm in diameter) Ag/AgCl electrodes filled with skin conductance electrode paste (0.5% saline in a neutral base) to improve the electrical conductivity of the skin. Before electrode attachment, participants were asked to wash their hands with clear water. Cables were fixated with an adhesive strip on participants' wrist to prevent unwanted movement. For measurement, the BITalino (DiY biosignals) recording device was used with a sampling rate of 1000 readings per second. The signal was transferred via Bluetooth to the software OpenSignals on the experimenter's PC. After a check whether the measurement worked and reactivity was shown, baseline EDA was recorded at the beginning of the study for four minutes, while participants were instructed to sit quietly and breathe normally. The second measurement was taken when subjects wrote about their goal. Recording was started one minute after participants began reading task instructions, to give them time to get involved in the task. The duration of the recording varied in length (M = 7.88 min., SD = 1.80) depending on how long individuals spent on the task, but lasted at least four minutes.

Complete physiological data was available for 142 participants as a result of some instances of measurement artifacts and equipment failure. First, EDA was converted into microSiemens (µS) and recordings were edited to the duration of 4 minutes using Matlab. Then, data was downsampled to 10 readings per second, and tonic and phasic activity was decomposed using Ledalab (version V3.4.7). As we were interested in within-subjects changes in tonic EDA states from baseline to the writing period, we subtracted (average) baseline skin conductance levels from skin conductance levels during the writing task to obtain a measure of individual skin conductance level reactivity (SCLR).

Performance expectations and cognitive performance. To measure cognitive performance, we used a phonemic fluency task as a validated measure of executive functioning (Henry, Hippel, & Baynes, 2009). Executive functions are cognitive processes that have been identified as important for the initiation and monitoring of actions and suffer under psychological stress (Arnsten, 1998). Phonemic fluency was assessed with the letters N, Z, and P. Participants had 1 minute to produce as many words as possible beginning with each letter. After reading task instructions, subjects reported their performance expectations with two items ("How good will you perform compared to the average student of your age and field?", 1 = *much worse*, 7 = *much better*; "How many words will you be able to produce within 1 minute?"). After the performance measure, participants were thanked, compensated, and debriefed.

Results

The majority of participants (113; 68.1%) named a goal from the studies / education / job domain; 29 (17.5%) participants named a leisure goal, 10 participants (6%) named a goal from the relationship domain, and 14 participants (8.4%) categorized their goal as stemming from "other" domains (e.g., personal development, health)[6].

Difficulties associated with an action crisis. In order to validate the aforementioned aspects that could make an action crisis threatening, an independent rater coded the content of the essays participants in the *action crisis* condition had written. We were interested in the

[6] When checking whether participants in the *action crisis* and *no action crisis* condition selected personal goals from different life domains, the test statistic $\chi^2(3) = 7.69$ was close to significance, $p = .053$. Further analyses clarified that more participants ($n = 9$) in the *action crisis* condition than in the *no action crisis* condition ($n = 1$) named a goal from the social domain, $\chi^2(1) = 7.02$, $p = .008$. When entering domain (social vs. non-social) as a covariate in our models, its effect was only marginally significant in one out of 12 tests. Since the interpretation of results was unaffected, we do not control for goal domain in the final model report.

occurrence (1 = *yes*, 0 = *no*) of each of the four difficulties outlined in the introduction: a) failure experiences in goal pursuit (coded when individuals mentioned setbacks in goal striving or questioned own abilities); b) negative evaluations related to giving up (coded when individuals wrote about regret over wrong past decisions, sunk costs, feeling of failure, or negative social evaluation); c) difficulties related to decision making under uncertainty (coded when individuals mentioned uncertainty about the better option, fear about making the wrong decision, anticipated regret); and d) negative affect about the potential loss of a valued end (coded when individuals mentioned sadness about not being able to reach their goal, or the necessity to redefine themselves in some aspect). Of 82 essays, one went missing and one could not be coded due to unreadable handwriting. In the remaining 80 essays, 47 (58.8%) discussed failure experiences in goal pursuit, 31 (38.8%) referred to feelings of failure related to abandoning the goal, 36 (45.1%) mentioned uncertainty about whether persistence or withdrawal was advisory, and 46 (57.5%) expressed negative affect about the potential inability to reach their goal. Thus, our sample suggests that difficulties stem from all four domains.

Manipulation check. An independent sample t-test confirmed that participants in the *action crisis* (vs. *no action crisis*) condition experienced significantly higher levels of action crisis, pointing out that the experimental manipulation had been successful. Still, there was a high amount of variance in action crisis levels also *within* experimental conditions (range was in both conditions 1.2 – 4.5), suggesting that conditions were not mutually exclusive. Due to this circumstance, we additionally tested our hypotheses with a regression analytic approach, in which continuous action crisis levels were used to predict outcomes of interest. Controlling for dispositional self-esteem and neuroticism, we could be more confident that the influence of the action crisis occurred irrespective of individuals' habitual self-regard.

Hypotheses tests. Descriptive statistics depending on experimental condition and results of conventional and Bayesian independent sample t-tests are shown in Table 10. Results of multiple regressions with the corresponding *p*-values and Bayes factors are presented in Table 11. The null model includes the intercept, dispositional self-esteem, and neuroticism (by using the option "is nuisance" in JASP). $BF_{Inclusion}$ indicates to what extent data speak in favor of including the action crisis as predictor in the model.

Table 10: Descriptives, Conventional and Bayesian t-Tests for Indicators of Self-Threat Depending on Experimental Condition in Study 2

	No action crisis		Action crisis						
Variable	*M*	*SD*	*M*	*SD*	*t*	df	*p*	Cohen's *d*	BF_{10}
Action crisis	2.53	0.68	3.26	0.67	6.98	164	< .001	1.09	2.29e +8[b]
Self-evaluation									
Feelings of self-worth	6.88	1.39	6.25	1.50	–2.82	164	.005	0.44	12.49[a]
Self-concept clarity	3.88	0.83	3.65	0.95	–1.70	159.96	.092	0.27	1.21[a]
Implicit self-esteem	0.58	0.29	0.61	0.33	0.67	158	.501	0.11	0.11[a]
Affect									
SAM: Valence	6.33	1.82	5.52	1.57	–3.07	164	.003	0.48	24.12[a]
SAM: Arousal	4.69	2.15	4.82	1.72	0.42	157.91	.675	0.07	0.24[b]
SAM: Power	6.12	1.55	5.62	1.64	–2.01	164	.046	0.31	2.09[a]
Physiological arousal									
SCLR (µS)	2.79	1.94	3.42	2.68	1.61	140	.111	0.27	1.09[b]
Performance									
Performance expectations	–	–	–	–	2.23	163	.027	0.35	3.26[a]
Phonemic fluency (words)	38.06	8.96	37.46	7.90	–0.45	163	.651	0.07	0.25[a]
IAT: Errors (%)	5.52	4.22	6.98	4.48	2.13	158	.035	0.34	2.64[b]

Note. SAM = Self-Assessment Manikin, SCLR = Skin conductance level reactivity, IAT = Implicit Association Test, BF_{10} = Bayes factor to quantify evidence for the alternative hypothesis relative to the null hypothesis. [a] The alternative hypothesis specifies that group *0* is greater than group *1*. [b] The alternative hypothesis specifies that group *0* is less than group *1*.

Self-evaluation. Consistent with our hypothesis, there was strong evidence that reflecting on an action crisis (vs. unobstructed goal striving) results in less positive feelings of self-worth. This finding was supported by decisive evidence for the alternative relative to the null hypothesis on the correlational level of analysis, controlling for trait self-esteem and neuroticism. The study was not very informative about whether the action crisis results in reduced self-concept clarity beyond the influence of dispositional self-esteem and neuroticism. Both when analyzed experimentally and correlationally statistical significance was just missed. Bayes factors around 1 suggest that beliefs about the validity of the alternative vs. the null model should not be updated in either direction. With respect to implicit self-esteem, a BF lower than 0.33 provided substantial evidence for the null relative to the alternative hypothesis, suggesting that implicit self-esteem is not reduced by reflecting on an action crisis (vs. unobstructed goal striving). This conclusion was supported in the correlational analysis.

Affect. Both the experimental as well as the correlational analysis provided strong evidence in favor of the hypothesis that reflecting on an action crisis makes individuals feel less happy (sadder). Moreover, individuals who experienced higher levels of action crisis felt

less strong (more helpless). Data are inconclusive about whether reflecting on an action crisis makes individuals feel more agitated (less calm).

Physiological arousal. With regard to the question whether an action crisis leads to objectively measured physiological arousal, evidence was not conclusive. Even though action crisis levels were significantly positively correlated with SCLR, controlling for dispositional self-esteem and neuroticism, the BF shows that evidence for the alternative hypothesis relative to the null hypothesis is weak, and more data on this question is needed.

Cognitive performance. With respect to cognitive performance, operationalized by phonemic fluency, the Bayesian analysis provided substantial evidence that conditions did not differ. Continuous action crisis levels tended to correlate negatively with phonemic fluency, controlling for dispositional self-esteem and neuroticism; however, the BF suggests that this finding has to be considered preliminary. Interestingly, exploratory analyses revealed that individuals in the *action crisis* (vs. *no action crisis*) condition made significantly more errors in the self-esteem IAT, a finding that was supported on the correlational level of analysis. This may point to performance impairments resulting from an action crisis. We will return to this possibility in the discussion.

A further objective of this study was to test two possible mediators for performance buffering effects of an action crisis, increased physiological arousal and reduced performance expectations. In a first mediation model conducted with the PROCESS macro (Hayes, 2013) (model 4) in SPSS, individuals' SCLR was analyzed as mediator. We used continuous action crisis levels instead of experimental condition as predictor, given that conditions did not differ in SCLR. However, SCLR did not significantly predict performance, b = -0.34, SE = 0.30, $t(138)$ = -1.13, p = .261, when action crisis was controlled, b = -0.77, SE = 0.91, $t(138)$ = -0.85, p = .395, ruling it out as mediator. The second mediation model tested performance expectations for the upcoming task as mediator. The first requirement for mediation that performance expectations differed depending on condition was met (Table 10). Moreover, performance expectations significantly positively predicted performance, b = 3.85, SE = 0.80, $t(162)$ = 4.80, p = < .001, while the influence of condition on performance was not significant, b = 0.44, SE = 1.25, $t(162)$ = 0.35, p = .726. The confidence interval of the indirect effect did not include zero, b = -1.04, SE = 0.55, 95% CI = [-2.38 – -0.18], suggesting that an action

crisis, compared to unobstructed goal striving, results in reduced performance expectations, which, in turn, predict lower performance[7].

Table 11: Conventional and Bayesian Regression Analyses Predicting Indicators of Self-Threat with Action Crisis Levels in Study 2

	Covariate 1: Trait self-esteem				*Covariate 2:* Neuroticism				*Predictor:* Action crisis				
Models	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*	β	*b*	*SE*	*p*	$BF_{Inclusion}$
Self-evaluation													
Feelings of self-worth	.38	1.07	0.26	<.001	−.17	−0.30	0.18	.087	−.26	−0.50	0.13	<.001	159.90
Self-concept clarity	.35	0.60	0.20	.003	.03	0.03	0.13	.800	−.12	−0.14	0.10	.149	0.62
Implicit self-esteem	.10	0.06	0.08	.453	−.04	−0.02	0.05	.753	−.05	−0.02	0.04	.609	0.34
Affect													
SAM: Valence	.25	0.85	0.38	.024	.13	0.28	0.25	.268	−.35	−0.78	0.18	<.001	784.70
SAM: Arousal	.13	0.50	0.44	.262	.20	0.46	0.30	.122	.14	0.34	0.22	.112	0.90
SAM: Power	.18	0.56	0.33	.097	−.13	−0.26	0.22	.245	−.28	−0.59	0.16	<.001	91.11
Physiological arousal													
SCLR (µS)	−.20	−0.92	0.57	.113	−.27	−0.75	0.38	.049	.20	0.60	0.28	.036	2.23
Performance													
Performance expectations	.27	0.41	0.18	.022	.33	0.31	0.12	.010	−.20	−0.21	0.09	.019	3.49
Phonemic fluency (words)	.13	2.18	1.96	.269	.20	2.07	1.32	.119	−.15	−1.69	0.95	.079	1.21
IAT: Errors (%)	−.17	−1.45	1.05	.168	−.20	1.04	0.70	.139	.18	1.02	0.51	.048	1.75

Note. SAM = Self-Assessment Manikin, SCLR = Skin conductance level reactivity, IAT = Implicit Association Test, $BF_{Inclusion}$ = Bayes factor in favor of including the action crisis as predictor into the null model consisting of intercept, dispositional self-esteem, and neuroticism ("nuisance").

Brief discussion

Study 2 strengthened our assumption that the action crisis is self-threatening. Consistent with Study 1, individuals experienced less positive self-worth, more negative affect, and a reduced sense of personal control after thinking about an action crisis. Whether also self-concept clarity is reduced, beyond the influence of dispositional self-esteem and neuroticism, cannot be told based on this study. Given that the test was inconclusive, prior beliefs should not be updated in either direction.

The study provided substantial evidence that implicit self-esteem is not affected by an action crisis. With some thought, this initially surprising finding became less so. Explicit and implicit self-esteem are separate, at best weakly positively correlated factors (Greenwald & Farnham, 2000). Whereas current events have a strong impact on how people see and evaluate themselves (Critcher & Dunning, 2014), there is only limited evidence that also implicit self-esteem is susceptible to change (DeHart & Pelham, 2007; Dijksterhuis, 2004).

[7] Also when testing mediation with continous action crisis levels instead of experimental condition, there was a significant indirect effect excluding zero, *b* = -0.58, *SE* = 0.26, 95% CI = [-1.18 – -0.14].

Rather, it seems to capture the "automatic, overlearned, and nonconscious evaluation of the self" (Bosson, Swann, & Pennebaker, 2000, p. 631). As the more global measure, is should be less easily influenced.

On a correlational level, the study provided preliminary support for increased skin conductance level reactivity in relation to more severe action crises, consistent with a study in which higher levels of action crisis predicted stronger cortisol increases during goal striving (Brandstätter et al., 2013). Contrary to Brandstätter and colleagues we measured physiological arousal in a situation in which individuals merely reflected on their goal, arguably resulting in a smaller effect that is more difficult to detect. Indeed, Bayesian analyses, which are known to be rather tentative (Wagenmakers, 2007), suggest that the test was inconclusive and more data is needed.

When analyzed across experimental conditions, individuals with higher levels of action crisis tended to lower phonemic fluency, even though no difference between conditions emerged. In retrospect, we think that the phonemic fluency measure was not fully appropriate to operationalize performance. Tests of verbal fluency are often applied to detect impairments in cognitive functions (Henry & Crawford, 2004; Henry, Crawford, & Phillips, 2004), so they might not sufficiently discriminate in other populations. Interestingly, individuals who had just thought about an action crisis (vs. unobstructed goal striving) had a higher percentage of wrong category attributions in the self-esteem IAT. Interpreting the IAT as a performance test that requires high amounts of attention and cognitive flexibility, this may indicate that individuals with an action crisis still had their goal-related doubts in mind and were not able to devote their full cognitive capacities to the task. Even though more studies on underlying mechanisms are needed, this study, for the first time, suggests that an action crisis reduces people's expectation to perform well on a subsequent task, and this reduced expectation predicts reduced performance. This pattern is fully consistent with the understanding of the action crisis as self-threatening.

Discussion

Individuals are motivated to predict and master important outcomes in their life (Steele, 1988). The important outcomes people strive for are reflected in their personal goals, the internal representations of desired end states individuals try to achieve in the future, or to maintain over time (Emmons, 2003). Whereas research on motivation and volition traditionally focuses on how individuals reduce discrepancies to their goals (Carver

& Scheier, 1998), a growing strand of research acknowledges that not in all cases these goals can be met (Brandstätter, 2003; Brandtstädter & Rothermund, 2002; Klinger, 1977; Wrosch et al., 2003). Based on the notion that disengaging from personal aspirations is troublesome (Brandtstädter & Rothermund, 2002; Klinger, 1977), the current research illustrates the self-threatening potential of an action crisis, in which further adherence to a goal is questioned (Brandstätter & Schüler, 2013).

Findings of two studies showed that reflecting on an action crisis, compared to unobstructed goal striving, leads individuals to evaluate themselves less positively and experience more negative affect; suggesting that the action crisis is something people use to make inferences about themselves. A qualitative analysis of the essays participants had written suggests that difficulties associated with the action crisis are many-faceted. As outlined in the discussion of Study 2, more studies should be conducted to investigate in which situations the action crisis is associated with increased physiological agitation or stress, and which mechanisms might underlie performance impairments.

Limitations

Given that only few experiments have to date been conducted on the action crisis, it was an announced objective of this research to study the effects of an action crisis on self-evaluation, affect, physiological arousal, and performance experimentally. Only with experiments can one demonstrate causal effects, why we regarded this as a relevant extension to past research. The used idiographic goal approach comes with the additional benefit that results are externally valid and can be generalized across a wide range of goals. However, several limitations need to be discussed.

First, instructing participants to name a personal goal with certain properties was not successful in all instances. In Study 2, some of the stated goals did not meet instructions, what run counter the necessity to create mutually exclusive conditions in terms of levels of action crisis experienced. In our view, this may explain the stronger support for our hypotheses when analyzed correlationally rather than experimentally. Focusing on the upside, that group differences were supported by correlations with continuously measured action crisis levels speaks in favor of the validity of the experimental manipulation. Moreover, controlling for dispositional self-esteem and neuroticism, we could be more confident that the action crisis is self-threatening independent of habitual self-regard. Second, we faced the methodological difficulty to make the action crisis salient in a situation (i.e., the lab) in which it usually is not. Being instructed to think about an action crisis arguably does not produce the same effects as

questioning a goal in response to current experiences in goal striving. Future studies might for instance use experience-sampling designs to investigate the predictive effects of an action crisis on indicators of self-threat. Advantages of this study design are that individuals' experiences in goal striving can be assessed, and that person-means in the respective outcome variables can be controlled. Third, we would like to note that when we formulated our hypotheses we thought of action crises in the pursuit of high-level goals (e.g., continuing or ending a romantic relationship, sticking to or abandoning an initiated career path) more than action crises in the pursuit of less self-relevant goals. Although we expect that our hypotheses do not equally hold for all kind of goals, we did not include a measure for goal centrality in this study and, hence, could not test a moderation effect. This should be addressed in future research. Taken together, as probably not all participants were able to name a high-level goal, about which they were in an action crisis, and considering that we made its experience salient in a situation in which it naturally was not, the effects we obtained might underestimate those of action crises in real-life goal pursuit.

Implications

Given its relevance for many theories, it is striking that the experience of self-threat has received relatively little empirical attention (Campbell & Sedikides, 1999). Whereas many studies have focused on its consequences, the state of self-threat and its determinants are only rarely addressed. In research on escalation of commitment, for instance, it is a strongly held assumption that feedback that challenges the correctness of own actions arouses threat (Brockner, 1992). The validity of this assumption is inferred from the regulatory behaviors that individuals show in response to negative feedback, such as staying on course, as well as the impact of specific moderators augmenting escalation effects (e.g., personal responsibility; (Staw, 1976). However, only few studies have directly investigated the relevance of threatened self-concerns for unwise persistence (for an exception, see Zhang & Baumeister, 2006), and studies seem to be missing that test whether questioning a goal arouses self-threat. The here reported findings show that it does, and emphasize the relevance of self-related processes in goal disengagement.

The present research also offers a theoretical perspective under which various effects of the action crisis can be subsumed. This should be informative as we know a lot about how people respond to threats, and may use this knowledge to make predictions about individuals' behavior in an action crisis. It is well known that self-threat arouses the motivation to re-establish self-integrity (Aronson, 1992; Campbell & Sedikides, 1999; Steele, 1988). This may

be achieved by denying, rationalizing, or counteracting threatening information, or engaging in other defensive behaviors that help to re-establish self-serving construals of reality (Cohen & Sherman, 2014; Sherman & Cohen, 2006). With regard to a failing goal, becoming entrapped may be a defensive response (Brockner, 1992); here, individuals may tell themselves that the project will turn out successfully if they simply invested more resources (Kelly & Milkman, 2013). However, individuals may also choose an indirect response for dealing with a threat, for instance by affirming independent values or life domains. Studies on self-affirmation theory (Steele, 1988) have shown that the self is a flexible system and defensiveness can be prevented if individuals are reminded of cherished self-conceptions not targeted by a current threat. This may help to put threat into perspective and mitigate its negative impact on the self (Cohen & Sherman, 2014; Critcher & Dunning, 2014; Sherman & Cohen, 2006). With self-integrity no longer on trial, the threatening issue may be approached more openly (Howell & Shepperd, 2012). Translated to the action crisis, one could assume that affirming an unrelated aspect of the self might have implications for how the decisional conflict between persistence and disengagement is resolved (Sivanathan, Molden, Galinsky, & Ku, 2008; Vohs et al., 2013). By pointing to the self-threatening nature of the action crisis, we hope that this research will not only contribute to our understanding of the action crisis, but also set the stage for an identification of strategies that help individuals, in the right moment, to disengage from their goal or to dissipate doubt.

Part IV

Resolving an Action Crisis by Affirming the Adequacy of the Self?

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Abstract

The action crisis defines the self-threatening experience of conflict between the opposing options of holding on to and letting go of a personal goal. In previous research, the need has been expressed to identify strategies that help individuals to resolve the action crisis either in the direction of further goal pursuit or disengagement, depending on the characteristics of the goal in question. Drawing from self-affirmation theory, four experimental studies tested whether individuals who had the chance to affirm a cherished, unrelated value would incorporate subjective appraisals of goal desirability and attainability to a stronger extent, a) with respect to the amount of planning for further goal pursuit as well as b) their preference for further goal pursuit versus disengagement. While two studies offered hypothesis-consistent evidence, two other studies did not. Potential limitations are discussed and recommendations given for future research.

Introduction

The striving for personal goals is an indispensable aspect of human life and constitutes, if successful, an important source of well-being (Brunstein, 1993; Emmons, 2003). However, goal striving does not always flow smoothly. When a goal was set unrealistically high or the person does not possess the abilities required for goal achievement, when conditions for goal pursuit have deteriorated, or when the goal has lost its appeal, goal striving may be fraught with obstacles. Sometimes these obstacles become so insurmountable that the individual faces the unpleasant decision whether to stick to or disengage from the goal, despite considerable investments (e.g., time, energy) already incurred. Research has conceptualized this intrapsychic conflict, in which the individual feels caught between persistence and disengagement, as an *action crisis* (Brandstätter & Schüler, 2013). As one of its main characteristics, deliberation about the costs and benefits of the goal, usually found before a goal is set, resurges (Brandstätter & Schüler, 2013).

Despite the generally adaptive potential of an action crisis to, as a result of thorough deliberation, renew commitment to a valued goal or initiate disengagement from a goal that has become unrealistic or too troublesome (Brandstätter & Schüler, 2013), it certainly has its pitfalls. Both persistence and the ability to disengage from unfruitful projects are important aspects of effective self-regulation (Brandstätter, 2003; Brandtstädter & Rothermund, 2002; Wrosch et al., 2003); in an action crisis, difficulty arises from the fact that it is often anything but clear which option is advantageous. Even in case of repeated setbacks there usually remains a slight hope that, with increased effort, the goal can still be attained (Brandstätter et al., 2013; Carver & Scheier, 1998; Klinger, 1977). If this hope was warranted, even partial disengagement would be a mistake (Wrosch et al., 2003). On the other hand, failing to disengage from a futile goal is detrimental as it causes ongoing failure and consumes resources that cannot be used for more promising projects (Wrosch et al., 2013).

In some instances, intrapsychic conflict may be aggravated by the fact that (at least) one of the options, holding on or giving up, holds unfavorable implications for the individual's sense of self. There may be some instances where adhering to the goal causes negative self-regard, when the goal contradicts the individual's personal or moral standards. However, much more discussed is the case where disengagement implies negative self-evaluation due to the often made reference of "giving up" to weakness and failure (Janoff-Bulman & Brickman, 1982; Wrosch et al., 2003). Questioning a goal, hence not only means to give up something valued, but to deal with the threat to the experience as competent and

adequate person. As a result, people may become locked in clearly failing endeavors by ever investing more resources (Brockner, 1992; Staw, 1981). Research on *escalation of commitment* and *entrapment* discusses people's willingness to sacrifice decisional accuracy to re-establish self-serving construals of reality.

Recently, the assumption has been put to empirical test that experiencing an action crisis is self-threatening, with supportive findings. In an experimental setting, reflecting on a personal action crisis (vs. unobstructed goal striving) immediately caused negative affect and led to reduced self-worth (Ghassemi & Brandstätter, in preparation). Moreover, several studies suggest that experiencing an action crisis jeopardizes goal-related performance, and that impairments may spill over to unrelated tasks in temporal proximity (Brandstätter et al., 2013; Ghassemi et al., in preparation; Herrmann & Brandstätter, 2015). From real-life goal striving it is known that an action crisis is associated with negative affect, and predicts reductions in psychological and physical well-being over time (Brandstätter, Herrmann, & Schüler, 2013). Accordingly, the need has been expressed to identify strategies that help individuals solve the action crisis in a timely fashion (Brandstätter & Herrmann, in press; Ghassemi & Brandstätter, in preparation). At present, however, not much is known about how this could be achieved.

Finding a suitable intervention

Thinking about an intervention that helps to solve the action crisis raises the question of what the desired outcome should be. Western societies have for long emphasized the need to persist in the face of obstacles, and to never give up on personal dreams. Disconfirming this belief, there is now scientific consensus that for keeping up well-being, everybody has to quit sometimes, as some goals are simply out of reach. Hence, more than persistence *per se*, the flexibility to adapt to changing conditions and the wisdom to "know when to hold and when to fold" seems to be at the core of living a happy and fulfilled life (Emmons, 2003; Janoff-Bulman & Brickman, 1982; Lench & Levine, 2008; Wrosch et al., 2003).

The lack of all-round solutions points to the need to evaluate cues of the situation carefully and base the decision on the outcome of this evaluation process. However, it is exactly the capacity to distinguish between relevant and irrelevant pieces of information that may become restricted under threat. As Cohen and Sherman (2014) noted, individuals at times "adopt a tunnel-vision focus on the threat and lose sight of what really matters" (p. 359). Moreover, they tend to avoid information with potentially unwanted implications and trade off decisional accuracy for self-justification (Hart et al., 2009; Simpson, Ickes, & Blackstone,

1995; Sweeny, Melnyk, Miller, & Shepperd, 2010). Clearly, the challenge an intervention has to meet is to offset these adverse effects of threat.

To conclude, a helpful intervention might be one that reduces the need for self-justification and helps to process relevant information systematically, to achieve a well-reasoned preference for persistence or disengagement appropriate to the situation (Simonson & Staw, 1992). Which information, however, can be regarded as relevant? At the most basic level, the factors pertinent to the question whether a goal should be pursued are its subjective value as well as the expectancy that it can be attained (Atkinson, 1964; Feather, 1982; Vroom, 1964). Supporting this notion, a realistic evaluation of opportunities for goal achievement and a reanalysis of goal value have been denoted as essential for decisions about persistence and disengagement (Janoff-Bulman & Brickman, 1982; Wrosch et al., 2013).

Whether the identification and consideration of relevant information is more likely achieved through an intensified engagement with the goal or, by contrast, through increasing distance to it, is difficult to say. There is, however, evidence that psychological distance can improve decision making in situations of information overload (Fukukura, Ferguson, & Fujita, 2013). The claim has been made that approaches that direct individuals' focus on something else than the current threat may work equally well, and sometimes even better than head-on assaults on it (Cohen & Sherman, 2014; Critcher & Dunning, 2014). In the present research, we tested such an "indirect" approach based on self-affirmation theory.

Benefits of affirming the adequacy of the self

Self-affirmation theory holds that individuals are motivated to maintain an experience of the self as adequate (Steele, 1988), and act defensively when this experience is threatened. However, as individuals' primary goal is not to undo any particular threat, but to maintain an overarching positive view on the self, defensiveness can be prevented by affirming other valued self-aspects. In many studies, self-affirmation is achieved by asking participants to reflect on a cherished value not targeted by a threat (McQueen & Klein, 2006). Doing this, "the inconsistency would remain, of course, yet in the context of other valued self-concepts it should pose less threat to global self-integrity and thus be more tolerable" (Steele, 1988, p. 262).

The assumption that short reminders of self-integrity reduce defensiveness has been supported in an impressive body of research (for a review, see Cohen & Sherman, 2014, for meta analyses in the context of health behavior, see (Epton, Harris, Kane, van Koningsbruggen, G. M., & Sheeran, 2015; Sweeney & Moyer, 2015). When affirmed,

threatening issues can be approached (rather than avoided) and processed more thoroughly (Harris & Napper, 2005; Harris & Epton, 2009, 2010; Howell & Shepperd, 2012; Klein & Harris, 2009; Legault et al., 2012; van Koningsbruggen, Guido M. & Das, 2009).

A more thorough processing of information can heighten receptivity to its core features and change the conclusions derived from it. Klein, Harris, Ferrer, and Zajac (2011) found that affirmed (vs. non-affirmed) individuals only expressed feelings of increased vulnerability to risk, and consequently, stronger intentions to change risky health behaviors, when a threatening message of high quality was presented to them, but actually reported decreased feelings of vulnerability and lower intentions to change when the message was of low quality. Similarly, whereas affirmed (vs. non-affirmed) individuals responded more favorably to a persuasive message if it was of high quality, their responses turned out less favorably if the message was weak, arguably due to increased in own judgment and reliance on these judgments when forming an attitude (Brinol, Petty, Gallardo, & DeMarree, 2007; Correll, Spencer, & Zanna, 2004).

Even when individuals did not receive new information, but had to rely on their own thoughts about a topic, self-affirmation led to a polarization of established beliefs (van Prooijen, Sparks, & Jessop, 2013). Vohs and colleagues (2013) argued that self-affirmed individuals more readily internalize the informative value of self-relevant experiences (e.g., success and failure), with implications for motivation and performance. They assigned participants a task and manipulated self-affirmation and the experience of failure. Consistent with prior work, self-affirmation boosted performance expectations and performance in unobstructed tasks. Conversely, after failure, self-affirmation deflated performance expectations for and actual performance on subsequent task attempts, a pattern indicative of goal disengagement. While the authors interpreted this internalization of experiences as "not immediately beneficial to the task at hand" (Vohs et al., 2013, p. 26), it could be of particular use in an action crisis.

In the lab studies conducted by Vohs et al. (2013), participants' goals were much less complex and relevant than real life goals typically are. With these simple goals, where the path to goal achievement is scribed and future success can easily be judged based on prior experience, disengagement following failure is evident. Self-affirmation seems to help people to accept that, leading them to withdraw effort from an apparently useless endeavor. This conforms to studies, in which individuals who affirmed an important, unrelated value were less prone to escalation of commitment, measured as the amount of money reinvested in the initial, but failing decision (Sivanathan et al., 2008). Still, it is unclear whether self-

affirmation promotes quitting when it comes to difficulty in the pursuit of personal goals. Few higher-order goals are reached without occasional setbacks, which, in reverse, are not indicative of ultimate goal failure. Moreover, aside from perceived goal attainability, the subjective value of a goal is a main factor for the ease of letting it go (Jostmann & Koole, 2009; Wrosch et al., 2003). Given that prior studies did not test the effects of self-affirmation depending on varying levels of goal desirability, we deemed it insightful to study self-affirmation in the realm of obstructed personal goals.

In the action crisis as a threatening phase, we think that self-affirmation does not always promote disengagement. Based on findings suggesting that self-affirmation changes individuals' processing and use of relevant information, we hypothesized that in the action crisis, in which the view is blurred and individuals feel under pressure to make the best choice, self-affirmation functions as a "moment to pull back and regain perspective on what really matters" (Cohen & Sherman, 2014, p. 338). In this situation, self-affirmation might promote an unbiased processing of the available paths of action, going on and giving up, and help to form a preference not driven by self-protecting motives. Thus, after affirming the self in an action crisis, the characteristics of the goal in question, its desirability and attainability, might be the essential determinants of choice.

The present research

This research tested the hypothesis that when feeling caught in an intrapsychic conflict between holding on to and letting go of a personal goal, self-affirmation helps to align one's preference for persistence or disengagement to the goal's desirability and attainability. We assumed that, after affirming an unrelated value (vs. performing a control task), individuals would be more inclined to hold on if they subjectively appraised their goal as attainable and desirable, but would be less inclined to hold on if they appraised their goal as scarcely attainable and desirable. We tested this assumption in four experimental studies, relying on idiographic personal goals about which individuals were in an action crisis. Outcome variables of interest to this research are individuals' spontaneous amount of planning further goal pursuit when being led to think about their goal, and their preference in the decision conflict on a continuum between further goal pursuit and disengagement.[8]

[8] Depending on the study, more outcome variables were assessed than are in the focus of this paper. For better readability, these variables are not reported in this manuscript but can be requested from the authors.

Study 1

Method

Study design and sample. Study 1 followed a one-factorial (*self-affirmation* vs. *no self-affirmation*) between-subjects design. Two hundred forty-six U.S. residents were recruited via Amazon Mechanical Turk and completed the online study for monetary compensation. For reasons stated below, we excluded 12 participants from analyses, resulting in a sample of 234 participants (100 women; M_{age} = 34.89 years, SD_{age} = 16.32 years).

Procedure. ***Goal assessment.*** After participants had been introduced to the goal concept and were given some time to think of their personal goals, they were asked to specifically think of a goal in whose pursuit they experienced an action crisis (i.e., recurrent setbacks, implemental disorientation, disengagement impulses, conflict between holding on to and disengaging from the goal). After stating the goal that best fit the instruction, the intensity of action crisis with respect to that goal was assessed with the Action Crisis Scale (ACRISS; Brandstätter & Schüler, 2013), consisting of 6 items (e.g., "I have doubts whether I should continue striving for my goal or disengage from it", 1 = *strongly disagree*, 5 = *strongly agree*, α = .65). Furthermore, individuals' momentary preference for persistence versus disengagement was assessed with a scroll bar anchored at "I will disengage from this goal" (1) and "I will continue the pursuit of this goal" (101). Goal desirability was assesed with four items (e.g., "This goal is important to me", 1 = *strongly disagree*, 5 = *strongly agree*, α = .86) and goal attainability was assessed with three items (e.g., "Pursuing this goal seems difficult to me", 1 = *strongly disagree*, 5 = *strongly agree*, α = .53) applied in previous research (Ghassemi et al., 2017).

Self-affirmation manipulation. Using a standard manipulation of self-affirmation (Cohen, Garcia, Apfel, & Master, 2006), participants ordered ten values or life purposes (e.g., social relationships, independence; adapted from Harber, 1995; quoted from Cohen et al., 2000) in terms of personal importance. Subjects randomly assigned to the self-affirmation condition wrote an essay explaining why their top-ranked value was important to them, while participants in the control condition wrote an essay explaining why their lowest-ranked value could be important to someone else. As a value affirmation was found to have different effects depending on whether individuals reflect on the importance of the currently threatened domain or the importance of a domain unrelated to the current threat (Sherman & Cohen, 2006; Sherman et al., 2009; Sivanathan et al., 2008), we excluded data of 12 participants (11

in the experimental condition) who wrote in their essay about their obstructed goal (and how it was important to them or someone else).

Dependent variables. After the experimental manipulation, participants were asked to think about their goal again and let their mind wander. After the 1-minute "mind-wandering" exercise, a thought sampling was conducted following a procedure proposed by Heckhausen and Gollwitzer (1987). Subjects first wrote down their most recent thought, thereafter their second most recent thought, the first thought they had when being led to think about their goal, and finally, everything they thought of in between. The main dependent variables assessed individuals' self-reported inclination to plan further goal pursuit in the mind-wandering exercise ("Calling to mind the thoughts you had about your goal, to what extent can you agree with the following statement?" – "I made plans on how to achieve this goal", 1= *strongly disagree*, 5 = *strongly agree*), as well as their current preference for further goal pursuit (vs. disengagement), which was assessed using the scroll bar described before.

Results

Multiple regression analyses were calculated in SPSS. We dummy coded experimental condition (*self-affirmation* = 1, *no self-affirmation* = 0) and z-standardized continuous predictor variables for testing interaction effects between categorical and continuous measures (Aiken & West, 1991).

Preliminary analyses. Participants experienced moderate to high levels of action crisis with respect to the goal they had selected (M = 3.64, SD = 0.55). Conditions did not significantly differ in mean levels of action crisis, β = -.04, b = -0.05, SE = 0.07, $t(232)$ = -0.64, p = .522, goal attainability (M = 2.75, SD = 0.65), β = .06, b = 0.08, SE = 0.08, $t(232)$ = 0.92, p = .359, or goal desirability (M = 4.17, SD = 0.68), β = .12, b = 0.16, SE = 0.09, $t(232)$ = 1.83, p = .068; a marginal difference in goal desirability indicated that randomization had not been fully successful. In the self-affirmation condition, most participants (56 out of 125; 45%) wrote about "Social Relationships (with Friends, Family, or Partner)" as their top-ranked value. In the control condition, most participants (69 out of 121; 57%) wrote about religion as their lowest-ranked value.

Goal attainability and desirability in the amount of planning. We hypothesized that self-affirmation increases individuals' reliance on relevant goal characteristics (goal attainability, goal desirability) when it comes to planning further goal pursuit. In the regression conducted to test this hypothesis, we first entered condition (*self-affirmation* vs. *no self-affirmation*), standardized goal attainability, and standardized goal desirability as

predictors. It would be conceivable that affirmed individuals base their amount of planning on the goal's attainability and the goal's desirability independently from each other; this would be manifested in two significant two-way interactions with additive effects. However, it also would be possible that affirmed individuals base their amount of planning on their combined appraisal of the goal's attainability and desirability; this might be manifested in a significant three-way interaction. To test both possibilities, we included all possible two- and three-way interactions between condition, goal attainability, and goal desirability to predict the amount of planning during the mind-wandering exercise. The model, R^2 = .19, $F(7, 226) = 7.79$, $p <$ .001, revealed that both goal attainability, β = .33, b = 0.41, SE = 0.11, $t(226) = 3.93$, $p < .001$, and goal desirability, β = .27, b = 0.33, SE = 0.10, $t(226) = 3.50$, p = .001, significantly positively predicted the amount of planning. There was no significant main effect for self-affirmation condition, β = -.01, b = -0.02, SE = 0.15, $t(226) = -0.14$, p = .891. Against our expectation, none of the two- or three-way interactions was significant (all ts < 1).

Goal attainability and desirability in the preference for further goal pursuit vs. disengagement. A preliminary analysis revealed that individuals tended toward further goal pursuit to a significantly stronger degree after the experimental manipulation (M = 82.20, SD = 22.04) than at baseline (M = 75.98, SD = 20.08), $F(1, 232) = 45.82$, $p < .001$, partial η^2 = .17. To test our hypothesis that self-affirmation helps to acknowledge relevant goal characteristics when it comes to the preference for persistence versus disengagement, we included the same predictors as for our first outcome variable, the amount of planning. Additionally, we included individuals' baseline preference for further goal pursuit versus disengagement as predictor. The model, R^2 = .64, $F(8, 224) = 50.67$, $p < .001$, revealed that when the baseline preference was controlled, β = .69, b = 15.20, SE = 1.04, $t(224) = 14.59$, p < .001, both goal attainability, β = .15, b = 3.41, SE = 1.31, $t(224) = 2.61$, p = .010, and goal desirability, β = .12, b = 2.62, SE = 1.20, $t(224) = 2.19$, p = .030, significantly positively predicted the preference for further goal pursuit. There was no significant main effect for condition, β = -.02, b = -0.66, SE = 1.80, $t(224) = -0.37$, p = .712. Against our expectation, none of the two- or three-way interactions was significant (all ts < |1.31|).

Brief discussion

Study 1 did not provide evidence in favor of our hypotheses. Both individuals having performed a control task as well as affirmed individuals acknowledged the goal's attainability and desirability in their amount of planning and their preference for further goal pursuit versus disengagement. However, we noticed that after (vs. before) the experimental

manipulation, participants were significantly more inclined to hold on to their goal. This made us think of the possibility that participants of both conditions might have experienced a boost in confidence or self-efficacy related to a self-affirmation. First, this might be owed to the fact that the control task required participants to rank-order values as well, what may suffice to instigate cognitive processes that promote some clarity when being stuck with a personal goal. Second, reading control participants' essays, we wondered to what extent dissociating oneself from others in terms of specific values might be affirming as well (e.g., participants wrote: "I do not believe in any god(s) so religion is not important to me, but I know it can be very much so for others"). Although we are not aware of this question being discussed in self-affirmation research, it is known that participants tend to turn most self-reflective writing tasks into self-affirming ones (Cohen, Aronson, & Steele, 2000). To address this possibility, we used a control task unrelated to values in Study 2.

Study 2

In Study 2, we aimed to address three limitations inherent in Study 1. First, we chose a revised procedure that did not allow participants to affirm a value directly related to the obstructed goal. Second, we used a control task that was unlikely to exert any beneficial effects (e.g., by surreptitiously confronting an individual with his/her values). Third, to increase cognitive involvement with the action crisis, we asked participants to describe the difficulties they experienced with respect to their goal.

Method

Study design and sample. Study 2 was based on a one-factorial (*self-affirmation* vs. *no self-affirmation*) between-subjects design. Seventy-nine (60 women; M_{age} = 23.3 years, SD_{age} = 6.26 years) individuals, mainly students from a Swiss university, were reached via a department mailing list and completed the online study voluntarily or for partial course credit.

Procedure. Procedure and measures were identical to Study 1, with the following exceptions: To make the experience of action crisis more salient, participants described the difficulties they experienced with respect to their goal, before action crisis levels (α = .64), goal desirability (α = .86), and goal attainability (α = .46) were assessed. This time, we did not include a baseline measure of individuals' preference for further goal pursuit versus disengagement. To ensure the decoupling of the value affirmation from the domain in which the action crisis was experienced, we asked all participants, right after stating their goal, to

categorize it to one out of 10 values. Participants randomly assigned to the self-affirmation condition were later presented with a list of 9 values that excluded the chosen value. After rank-ordering the values, participants in the self-affirmation condition were asked to think of a time in their life when their top-ranked value had been meaningful and to explain in a written essay why this value was so important to them (Cohen, Garcia, Apfel, & Master, 2006). The control task was procedurally similar but not related to values (cf. (Brinol, Petty, Gallardo, & DeMarree, 2007; Cohen et al., 2000; Critcher, Dunning, & Armor, 2010). Participants randomly assigned to the control condition received a list of 9 animals (e.g., tiger, elephant) and ordered them in terms of their body weight (they were told not to worry if they were uncertain and just give their best guess), before they described in a short essay the living environment of the animal they had estimated to be the heaviest.

Results

Hypotheses were tested by means of multiple regressions in SPSS. Due to the smaller sample size and insufficient statistical power for a multiple regression with six predictors, we only tested two-way interactions between self-affirmation and goal attainability or desirability, respectively.

Preliminary analyses. Mean levels of action crisis (M = 3.34, SD = 0.57) did not significantly differ between conditions (*self-affirmation* = 1, *no self-affirmation* = 0), β = -.02, b = -0.02, SE = 0.13, $t(77)$ = -0.15, p = .881. Conditions did not differ in goal attainability (M = 3.07, SD = 0.61), β = .07, b = 0.08, SE = 0.14, $t(77)$ = 0.61, p = .547, or goal desirability (M = 3.79, SD = 0.81), β = .07, b = 0.12, SE = 0.18, $t(77)$ = .64, p = .526. In the self-affirmation condition, most participants (30 out of 45; 66%) chose "Social Relationships (with Friends, Family, or Partner)" as their top-ranked value. In the control condition, most participants (28 out of 34; 82%) rated "Elephant" as heaviest animal.

Goal attainability and desirability in the amount of planning. We hypothesized that self-affirmation increases individuals' reliance on goal attainability and desirability when it comes to the amount of planning for further goal pursuit. In the first regression, we entered condition, standardized goal attainability, and the condition by goal attainability interaction to predict planning. The model, R^2 = .13, $F(3, 75)$ = 3.05, p = .034, revealed no significant main effect of goal attainability, β = -.07, b = -0.25, SE = 0.24, $t(75)$ = -1.06, p = .292, and no main effect of condition, β = -.03, b = -0.07, SE = 0.27, $t(75)$ = -0.28, p = .783. However, the proposed condition by attainability interaction was significant, β = .48, b = 0.70, SE = 0.28, $t(75)$ = 2.46, p = .016. Simple slope analyses were calculated using the PROCESS macro

(Model 1) with heteroscedasticity-consistent standard errors. As shown in Figure 7, self-affirmation did not significantly affect planning among individuals who rated their goal as attainable (1 SD above the mean), b = 0.63, SE = 0.40, $t(75)$ = 1.56, p = .124. However, among individuals who rated their goal as scarcely attainable (1 SD below the mean), self-affirmation decreased planning of further goal pursuit, b = -0.77, SE = 0.33, $t(75)$ = -2.38, p = .020. From another perspective, whereas non-affirmed individuals did not base their amount of planning on the attainability of their goal, b = -0.25, SE = 0.20, $t(75)$ = -1.24, p = .218, affirmed individuals took their goal's attainability into account, b = 0.45, SE = 0.15, $t(75)$ = 2.99, p = .004.

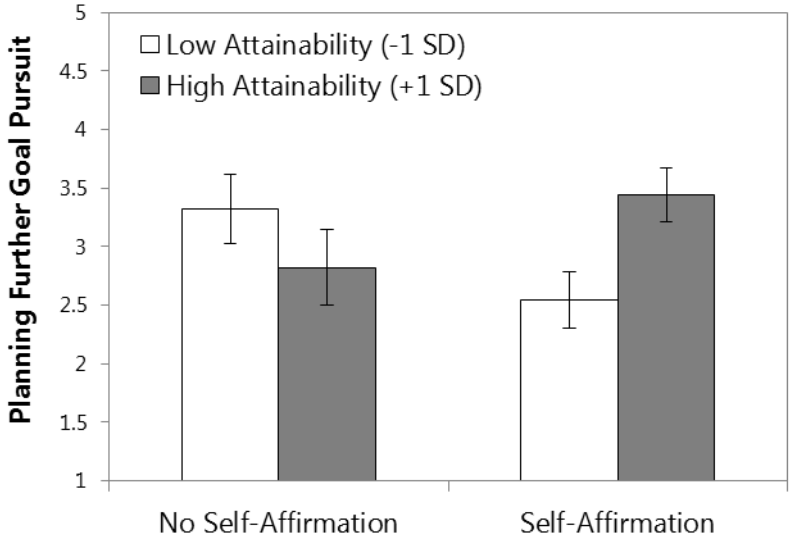

Figure 7: Individuals' inclination to plan further goal pursuit as a function of self-affirmation condition at ±1 SD goal attainability in Study 2. Error bars represent standard errors.

In the second regression, we entered condition, standardized goal desirability, and the condition by goal desirability interaction to predict planning. The model, R^2 = .10, $F(3, 76)$ = 2.69, p = .053, revealed no significant main effect of goal desirability, β = -.03, b = -0.03, SE = 0.19, $t(75)$ = -0.16, p = .872, and no main effect of condition, β = -.04, b = -0.10, SE = .27, $t(75)$ = -0.36, p = .719. The proposed condition by goal desirability interaction was significant, β = .33, b = 0.56, SE = 0.27, $t(75)$ = 2.09, p = .040. As displayed in Figure 8, self-affirmation did not significantly affect planning among individuals who rated their goal as desirable (1 SD above the mean), b = 0.46, SE = 0.41, $t(75)$ = 1.11, p = .269. However, among individuals who rated their goal as hardly desirable (1 SD below the mean), self-affirmation

tended to decrease planning, b = -0.65, SE = .34, t(75) = -1.90, p = .061. From another perspective, whereas non-affirmed individuals did not did not base their amount of planning on the desirability of their goal, b = -0.03, SE = 0.18, t(75) = -0.17, p = .864, affirmed individuals did, b = 0.52, SE = 0.19, t(75) = 2.77, p = .007.

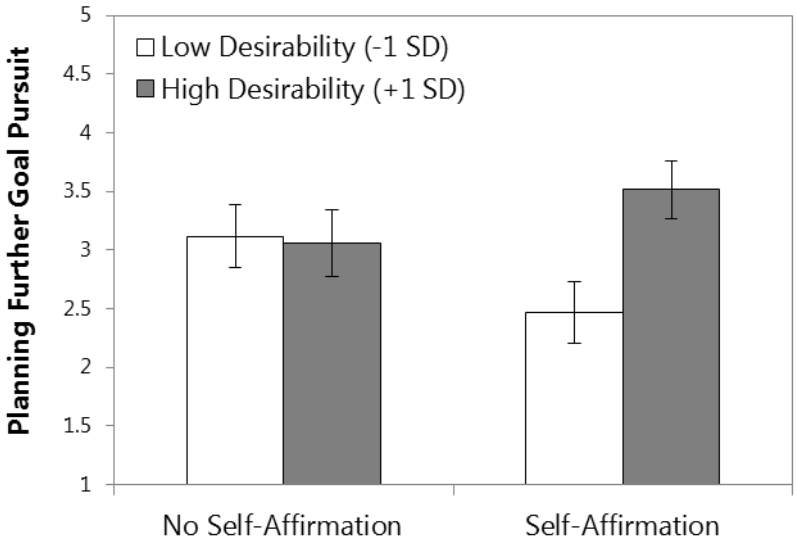

Figure 8: Individuals' inclination to plan further goal pursuit as a function of self-affirmation condition and goal desirability at ±1 SD in Study 2. Error bars represent standard errors.

Goal attainability and desirability in the preference for further goal pursuit vs. disengagement. We also expected that self-affirmation increases participants' reliance on goal attainability and desirability when it comes to the preference for further goal pursuit versus disengagement. In the first regression, condition, standardized goal attainability, and their interaction were included to predict the preference in the decision conflict. The model, R^2 = .20, F(3, 75) = 6.11, p = .001, revealed no significant main effect of goal attainability, β = .09, b = 1.99, SE = 3.96, t(75) = 0.50, p = .618, and no main effect of condition, β = .12, b = 4.98, SE = 4.47, t(75) = 1.11, p = .269. The hypothesized condition by attainability interaction reached marginal significance, β = .34, b = 8.91, SE = 4.79, t(75) = 1.86, p = .067. Figure 9 shows that among individuals who rated their goal as attainable (1 SD above the mean), self-affirmation marginally significantly increased the preference for further goal pursuit, b = 13.89, SE = 7.92, t(75) = 1.75, p = .084. Self-affirmation did not significantly affect individuals' preference among those who rated their goal as scarcely attainable (1 SD below the mean), b = -3.93, SE = 8.66, t(75) = -0.45, p = .651. Whereas control participants did not base their current preference on the attainability of their goal, b = 1.99, SE = 5.74, t(75) =

0.35, p = .731, self-affirmed participants had a significantly stronger preference for further goal pursuit when they perceived their goal as attainable (1 SD above the mean), b = 10.90, SE = 3.43, $t(75)$ = 3.18, p = .002.

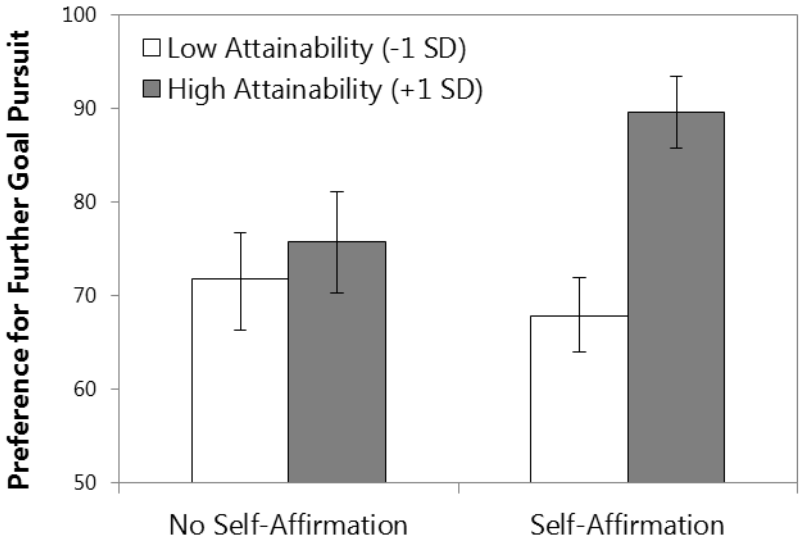

Figure 9: Individuals' preference for further goal pursuit versus disengagement as a function of self-affirmation condition and goal attainability at ±1 SD in Study 2. Error bars represent standard errors.

In the second regression, we entered condition, standardized goal desirability, and their interaction to predict individuals' preference in the decision conflict. The model, R^2 = .35, $F(3, 75)$ = 13.24, p < .001, revealed a significant main effect of goal desirability, β = .54, b = 11.56, SE = 2.87, $t(75)$ = 4.03, p < .001, and no main effect of condition, β = .09, b = 4.01, SE = 4.03, $t(75)$ = 0.09, p = .323. Against our expectation, the condition by goal desirability interaction was not significant, β = .05, b = 1.45, SE = 4.02, $t(75)$ = .36, p = .719 (see Figure 10). Participants of the experimental and control condition equally based their preference for further goal pursuit versus disengagement on the desirability of their goal.

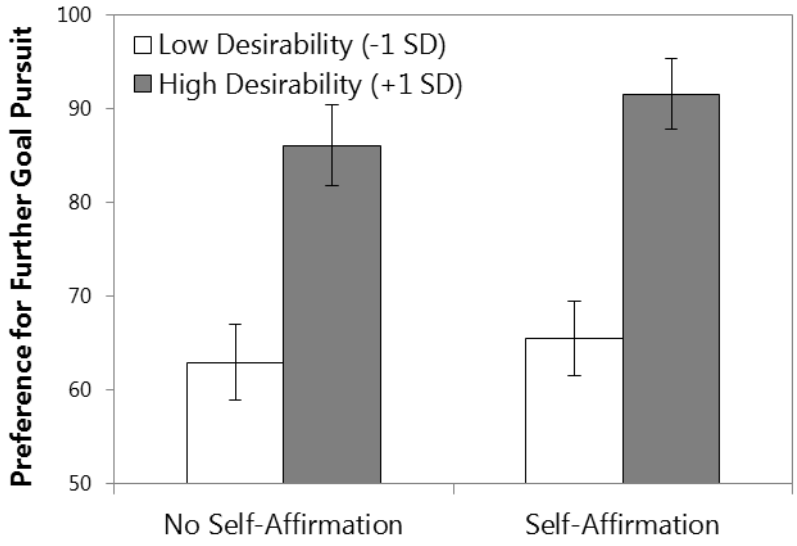

Figure 10: Individuals' preference for further goal pursuit versus disengagement as a function of self-affirmation condition and goal desirability at ±1 SD in Study 2. Error bars represent standard errors.

Brief discussion

Study 2 provided evidence in favor of the hypothesis that self-affirmation helps to acknowledge the goal's motivational features when facing the decision whether to stick to or give up a personal goal. We found that self-affirmed, but non-affirmed individuals based the extent to which they engaged in planning for their obstructed goal on their appraisals of goal desirability and attainability. Likewise, self-affirmed, but not non-affirmed individuals tended more towards further goal pursuit (vs. disengagement) the more they perceived their goal as attainable. Affirmed individuals also tended more towards further goal pursuit the more they perceived their goal as desirable; however, this last interaction was not significant, given that also control participants took their goal's desirability into account.

Study 3

The objective of Study 3 was to replicate findings of Study 2 with a revised procedure and larger sample size. In Study 2, participants in the control condition had worked on a task that, in content, stood out from the remaining study material. To rule out that bifurcation effects due to the value affirmation resulted because subjects engaged in a more meaningful exercise, Study 3 used another control task. Second, to reduce error variance related to the

heterogeneity of goals (e.g., in terms of self-relevance), we investigated action crises in the context of one shared goal. We focused on the goal to complete a study degree as a high-level goal that often gives rise to doubt, and about which we could be quite certain that goal abandonment (i.e., study dropout) would be self-threatening. By cooperating with student counselling centers, we reached students who were currently in an action crisis with regard to their study goal.

Method

Study design and sample. The study followed a one-factorial (*self-affirmation* vs. *no self-affirmation*) between-subjects design. One hundred seventy-six students (125 women; M_{age} = 24.78 years, SD_{age} = 4.94 years) who currently were in an action crisis with regard to their study goal were recruited via counselling centers across Switzerland, online forums discussing study dropout, and the department mailing list. They completed the online study for partial course credit or monetary compensation. To achieve a sufficiently large sample, data were collected in two time periods one year and two months apart. As the difference in timing within the academic term could affect the experience of action crisis, we included data collection wave as covariate in our analyses.

Procedure. ***Goal assessment.*** An adapted version of the ACRISS-Scale measured participants' level of study-related action crisis (e.g., "I have thought of quitting my studies", 1 = *strongly disagree*, 5 = *strongly agree*, α = .71). Likewise, goal attainability (e.g., "Successfully pursuing my studies seems difficult to me", reverse coded, 1 = *strongly disagree*, 5 = *strongly agree*, α = .62) and desirability (e.g., "Pursuing my studies is important to me", 1 = *strongly disagree*, 5 = *strongly agree*, α = .79) were assessed with reference to the study goal (Ghassemi et al., 2017; Herrmann & Brandstätter, 2015). A baseline measure of the scroll bar anchored at "I will drop out of my studies" (1) and "I will continue my studies" (101) queried participants' baseline preference for further goal pursuit versus disengagement. Participants described the difficulties and doubts that caused them to consider study dropout before they were randomly assigned to experimental conditions.

Self-affirmation manipulation. Participants in the self-affirmation condition rank-ordered 10 values unrelated to academic or intellectual achievement. Then, they wrote an essay about how their first-ranked value was important to them and described a situation in which that value had made them feel good about themselves (Cohen et al., 2000). Subjects in the control condition received a list of 10 points of interest neutral in valence and supposedly unrelated to goal pursuit (e.g., train station, grocery store). After rank-ordering points of

interest in terms of how frequently participants visited them, they wrote turn-by-turn directions from their home to the most frequently visited point.

Dependent variables. After the mind-wandering exercise and the thought sampling described before, participants' planning was assessed with two items ("I made plans what to do to successfully complete my studies", "I thought about when, how, and where to work for my studies", 1= *strongly disagree*, 5 = *strongly agree*, α = .69). The current preference for further goal pursuit versus disengagement was assessed with the scroll bar anchored at "I will drop out of my studies" (1) and "I will continue my studies" (101).

Results

Hypotheses were tested by means of multiple regressions in SPSS, using the same approach as in Study 1, including both two-way and three-way interaction between condition, goal attainability, and goal desirability.

Preliminary analyses. Mean level of action crisis (M = 3.60, SD = 0.61) did not significantly differ between conditions (*self-affirmation* = 1, *no self-affirmation* = 0), β = -.07, b = -0.08, SE = 0.09, $t(174)$ = -0.91, p = .364. Conditions did not differ in goal attainability (M = 3.30, SD = 0.74), β = .00, b = 0.00, SE = 0.11, $t(174)$ = -0.03, p = .973, or goal desirability (M = 3.60, SD = 0.72), β = .03, b = 0.05, SE = 0.11, $t(174)$ = 0.45, p = .656. In the self-affirmation condition, most participants (53 out of 88; 60%) chose "Social Relationships (with Friends, Family, or Partner)" as their top-ranked value. In the control condition, most participants (55 out of 88; 63%) wrote directions to the station as the most visited place.

Goal attainability and desirability in the amount of planning. Condition, standardized goal attainability, standardized goal desirability, as well as all two- and three-way interactions were used as predictors in a multiple regression predicting planning. In addition, to control for potential differences between the two data collection periods, we included (dummy coded) time of data collection, and its two-way interaction with condition. The model, R^2 = .14, $F(9, 166)$ = 4.13, p < .001, revealed no significant main effect of goal attainability, β = -.01, b = -0.01, SE = 0.11, $t(166)$ = -0.09, p = .927, a significant main effect of goal desirability, β = .33, b = 0.35, SE = 0.11, $t(166)$ = 3.13, p = .002, and surprisingly, a significant main effect for condition, β = .19, b = 0.39, SE = 0.17, $t(166)$ = 2.31, p = .022, suggesting that affirmed (vs. non-affirmed) individuals planned significantly more on how to best pursue their study degree. In the second period of data collection, individuals planned significantly more than in the first data collection period, β = .24, b = 0.63, SE = 0.25, $t(166)$ = 2.48, p = .014. There was some evidence that self-affirmation increased planning especially

among participants recruited in the first period, β = -.18, *b* = -0.62, *SE* = 0.37, *t*(166) = -1.70, *p* = .091. None of the interactions was significant (all *t*s < 1.15).

Goal attainability and desirability in the preference for further goal pursuit vs. disengagement. To predict individuals' preference for the continuation versus termination of their studies, we used the same predictors described above. Additionally, we included individuals' baseline preference in the model, R^2 = .79, *F*(10, 165) = 63.78, *p* < .001. Findings showed that individuals' preference before the experimental manipulation strongly predicted their preference after the manipulation, β = .82, *b* = 10.88, *SE* = 1.04, *t*(165) = 20.05, *p* < .001. Beyond that, there was a marginal significant main effect for condition, β = .07, *b* = 3.64, *SE* = 2.08, *t*(165) = 1.76, *p* = .080, suggesting that affirmed individuals tended to favor the option of continuing their studies more than non-affirmed individuals. The attainability of the study goal had a significant positive effect, β = .12, *b* = 3.17, *SE* = 1.40, *t*(165) = 2.26, *p* = .025, whereas the study goal's desirability did not, β = .06, *b* = 1.62, *SE* = 1.37, *t*(165) = 1.19, *p* = .238. There was no effect of data collection period, and none of the interactions was significant (all *t*s < 1).

Brief discussion

In Study 3, we did not find support in favor of our hypothesis, but rather found that affirmed (vs. performing a control task) students were more inclined to hold on to their goal to complete their study degree. On the on hand, this may be interpreted as evidence that self-affirmation has an effect in the action crisis; on the other hand, given the inconsistency of findings, this may also point to random error. As the goal to complete a study degree is a particularly high-level and defining one for most students, it could be speculated that the affirmation of an unrelated cherished value boosted individuals' confidence to go on, but, given its high relevance, rarely directed individuals to disengagement. As a methodologically closer replication of Study 2, in Study 4, we returned to the use of idiographic personal goals.

Study 4

Apart from going back to the study of idiographic goals, we used an even larger and more heterogeneous sample (with regard to sex, age, employment) in a further attempt to replicate findings of Study 2. An additional objective of Study 4 was to test whether goal appraisals changed in response to the value affirmation. Throughout this paper, we have argued that affirmed individuals incorporate their goal's attainability and desirability to a stronger extent,

while not addressing the possibility that self-affirmation might change appraisals of goal attainability and desirability. To answer this question, we assessed goal appraisals again after the experimental manipulation. To avoid potential influences resulting from a renewed assessment, we included the second measurement as additional experimental factor.

Method

Study design and sample. The study followed a 2 (self-affirmation vs. no self-affirmation) x 2 (repeated assessment vs. no repeated assessment of goal characteristics) between-subjects design, and was completed by 209 individuals recruited by an online panel provider located in Germany. Thirteen participants were excluded because they did not provide answers in open text format, e.g., the experimental manipulation, or reported not having an appropriate goal (2 participants). Thus, analyses are based on 196 participants (101 women; M_{age} = 23.7 years, SD_{age} = 3.75 years), of which 41.3% were employed, 35.2% were students, and 23.5% reported doing something else (e.g., raising a child).

Procedure. ***Goal assessment.*** After subjects had named a personal goal about which they were in an action crisis, they described in a written essay why they originally had decided to pursue the goal, what kind of difficulties they confronted in goal striving, and what giving up the goal would mean to them. Action crisis (α = .80), goal attainability (baseline: α = .59), goal desirability (baseline: α = .88), and the baseline preference for further goal pursuit versus disengagement were assessed with the previously described measures.

Self-affirmation manipulation. The experimental manipulation was the same as in Study 3.

Dependent variables. After the experimental manipulation, participants were asked to think about their goal. Subsequently, they reported the thoughts that had come to their mind with the previously described procedure. To analyze whether the value affirmation led to changes in goal appraisals, goal desirability and attainability were once again assessed among participants randomly allocated to the repeated assessment condition. Participants' spontaneous inclination to plan the further pursuit of their goal was assessed with two items ("I make plans on how to successfully attain this goal", "I think about when, how, and where to implement this goal", 1 = *strongly disagree*, 5 = *strongly agree*, α = .77). Furthermore, participants rated on the scroll bar anchored at "I will disengage from this goal" (1) and "I will continue the pursuit of this goal" (101) their preference for either disengagement or persistence.

Results

Preliminary analyses. Mean levels of action crisis (M = 3.11, SD = 0.77) did not significantly differ between conditions (*self-affirmation* = 1, *no self-affirmation* = 0), β = .02, b = 0.03, SE = 0.11, $t(196) = 0.26$, p = .798. Conditions also did not differ in baseline goal attainability (M = 3.28, SD = 0.77), β = .05, b = 0.08, SE = 0.11, $t(196) = 0.72$, p = .475, or baseline goal desirability (M = 4.17, SD = 0.79), β = .10, b = 0.16, SE = 0.12, $t(196) = 1.40$, p = .162. Most participants (39 out of 94; 42%) in the self-affirmation condition wrote about the importance of "Social Relationships (with Friends, Family, or Partner"). In the control condition, most participants (63 out of 104; 60%) described directions to the nearby grocery store as the most frequently visited point of interest.

Goal appraisals. To analyze whether individuals change their goal appraisal in response to a value affirmation, we conducted two mixed-model ANOVAs with goal attainability (goal desirability, respectively) as repeated factor (before vs. after the experimental manipulation) and self-affirmation as between-subjects factor. The first analysis showed that goal attainability was not significantly different before and after the experimental manipulation, $F(1,95) = 1.99$, p = .162, partial η^2 = .02, and condition did not moderate the effect, $F(1,95) = 0.65$, p = .421, partial η^2 = .01. The second analysis revealed that goal desirability before and after the manipulation was not significantly different, $F(1,95) = 1.55$, p = .216, partial η^2 = .02. Condition did not moderate the effect, $F(1,95) = 0.01$, p = .929, partial $\eta^2 < .01$. Thus, the study did not provide any reason to assume that the value affirmation affected individuals' appraisal of goal attainability and desirability.

Goal attainability and desirability in the amount of planning. We ran a multiple regression analysis to test the hypothesis that in an action crisis, people who have affirmed the self particularly plan further goal pursuit if they regard their goal as desirable and attainable, whereas non-affirmed individuals consider the impact of these goal characteristics to a lesser extent. The model revealed, R^2 = .33, $F(7,188) = 13.36$, $p < .001$, that individuals who perceived their goal as more desirable, β = .41, b = 0.34, SE = 0.07, $t(188) = 4.77$, $p < .001$, or more attainable, β = .28, b = 0.23, SE = 0.07, $t(188) = 3.42$, p = .001, planned significantly more on how to achieve their goal. There was no main effect of self-affirmation, and none of the two-way interactions was significant (all ts < 1). However, the three-way interaction between self-affirmation, goal attainability, and goal desirability was significant, β = .22, b =

0.34, *SE* = 0.12, *t*(188) = 2.91, *p* = .004.[9] Using the PROCESS macro (Model 3 with heteroscedasticity-consistent standard errors), we could tell that among individuals who had performed a control task, goal attainability significantly predicted the amount of planning if the goal was not very desirable (1 SD below the mean), *b* = 0.26, *SE* = 0.13, *t*(188) = 2.04, *p* = .042, and marginally significantly predicted planning if the goal was desirable (1 SD above the mean), *b* = 0.20, *SE* = 0.11, *t*(188) = 1.78, *p* = .077 (see Figure 11). Among affirmed individuals, goal attainability did not predict planning if the goal was scarcely desirable (1 SD below the mean), *b* = -0.14, *SE* = 0.18, *t*(188) = -0.79, *p* = .430, but significantly predicted planning if the goal was desirable (1 SD above the mean), *b* = 0.49, *SE* = 0.16, *t*(188) = 3.05, *p* = .003. From another perspective, among control participants, goal desirability significantly predicted planning irrespective of whether the goal was perceived as scarcely attainable (1 SD below the mean), *b* = 0.36, *SE* = 0.12, *t*(188) = 3.12, *p* = .002, or attainable (1 SD above the mean), *b* = 0.31, *SE* = 0.13, *t*(188) = 2.38, *p* = .018. Among affirmed individuals, goal desirability only predicted planning if the goal was attainable (1 SD above the mean), *b* = 0.56, *SE* = 0.14, *t*(188) = 3.94, *p* < .001, but not if the goal was scarcely attainable (1 SD below the mean), *b* = -0.07, *SE* = 0.16, *t*(188) = -0.45, *p* = .651. Contra-intuitively to these findings, among individuals who perceived their goal as both attainable and desirable (1 SD above the mean), self-affirmation did not significantly increase planning, *b* = 0.20, *SE* = 0.21, *t*(188) = 0.95, *p* = .345, but among individuals who regarded their goal as scarcely desirable and attainable there was a marginally significant effect for self-affirmation increasing planning (1 SD below the mean), *b* = 0.49, *SE* = 0.25, *t*(188) = 1.94, *p* = .054. Given that this finding was theory-inconsistent, not significant on the 5% level, and inconsistent with the remaining results, it is not discussed further.

[9] When including the experimental factor whether individuals repeatedly reported on their goal's features as a covariate, there was neither a significant main effect, nor a significant interaction with self-affirmation condition. Moreover, results were completely unchanged. For parsimonity, we did not include the experimental factor as covariate in the model reported.

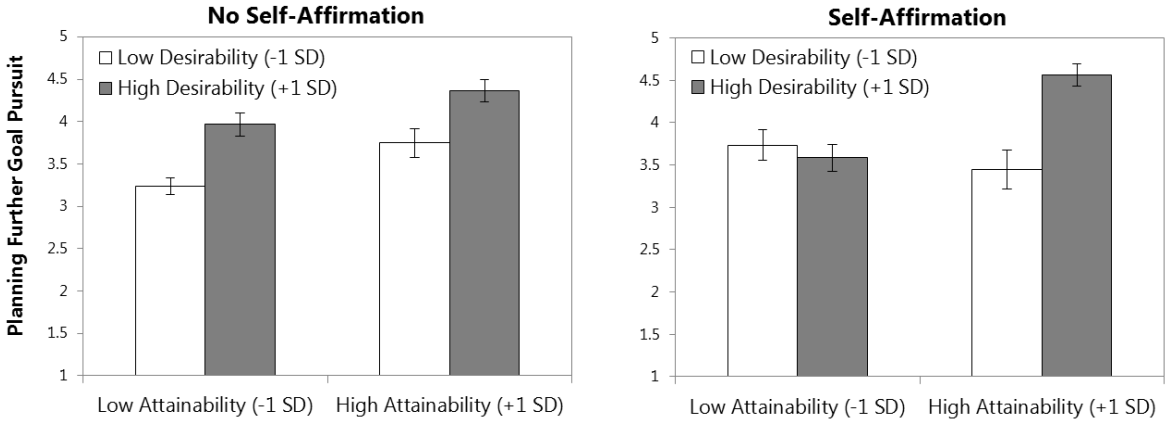

Figure 11: Individuals' inclination to plan further goal pursuit as a function of self-affirmation condition, goal desirability at ±1 SD, and goal attainability at ±1 SD in Study 4. Error bars represent standard errors.

Goal attainability and desirability in the preference for further goal pursuit vs. disengagement. The multiple regression analysis predicting individuals' preference for further persistence (vs. disengagement) revealed a multivariate outlier whose residual exceeded 7 standard deviations and which we excluded. The model, R^2 = .85, $F(8,186)$ = 126.95, p < .001, showed that individuals' baseline preference in the decision conflict strongly predicted their preference after the experimental manipulation, β = .87, b = 18.54, SE = 0.79, $t(186)$ = 23.37, p < .001. The goal's desirability, β < .001, b = -0.01, SE = 0.98, $t(186)$ = -0.01, p = .994, and attainability, β = .03, b = -0.66, SE = 0.87, $t(186)$ = 0.76, p = .450, were above that no significant predictors. There was no main effect of condition, β = -.02, b = -0.77, SE = 1.26, $t(186)$ = -0.61, p = .545. Neither the condition by attainability interaction, β = -.01, b = -0.20, SE = 1.37, $t(186)$ = -0.15, p = .885, the condition by desirability interaction, β = .05, b = 1.71, SE = 1.34, $t(186)$ = 1.28, p = .204, nor the desirability by attainability interaction, β = -.05, b = -1.06, SE = 0.71, $t(186)$ = -1.49, p = .139, were significant. However, there was a significant three-way interaction between self-affirmation condition, goal desirability, and goal attainability, β = .08, b = 3.01, SE = 1.49, $t(186)$ = 2.02, p = .045 [10].

Figure 11 shows that among individuals in the control condition, goal desirability did not significantly predict the preference for further goal pursuit irrespective if the goal was scarcely attainable (1 SD below the mean), b = 1.10, SE = 1.06, $t(186)$ = 1.04, p = .301, or attainable (1 SD above the mean), b = -1.11, SE = 1.43, $t(186)$ = -0.78, p = .438. Among

[10] When including the second experimental factor as a covariate, there was neither a significant main effect, nor a significant interaction with self-affirmation condition. However, the three-way interaction dropped to p = .055. As the pattern of results remained stable, we did not include the experimental factor as covariate in the model reported.

affirmed individuals, goal desirability did not increase the preference for further goal pursuit if the goal was scarcely attainable (1 SD below the mean), b = -0.27, SE = 1.64, $t(186)$ = -0.16, p = .872, but did if the goal was perceived as attainable (1 SD above the mean), b = 3.79, SE = 1.84, $t(186)$ = 2.07, p = .040. From another perspective, among non-affirmed participants, goal attainability did not significantly predict the preference for further goal pursuit irrespective of whether the goal was scarcely desirable (1 SD below the mean), b = 1.74, SE = 1.12, $t(186)$ = 1.56, p = .121, or desirable (1 SD above the mean), b = -0.40, SE = 1.15, $t(186)$ = -0.35, p = .727. On the contrary, among self-affirmed individuals, goal attainability did not affect the preference for further goal pursuit if the goal was scarcely desirable (1 SD below the mean), b = -1.52, SE = 2.06, $t(186)$ = -0.74, p = .463, but tended to increase the preference for further goal pursuit if the goal was desirable (1 SD above the mean), b = 2.42, SE = 1.33, $t(186)$ = 1.82, p = .071. Among individuals who regarded their goal as not very desirable and attainable (1 SD below the mean), self-affirmation did not affect individuals' preference for further goal pursuit vs. disengagement, b = 0.75, SE = 3.06, $t(186)$ = 0.25, p = .806; however, among individuals who regarded their goal as both desirable and attainable (1 SD above the mean), self-affirmation significantly increased individuals' orientation towards further goal pursuit, b = 3.73, SE = 1.67, $t(186)$ = 2.23, p = .027.

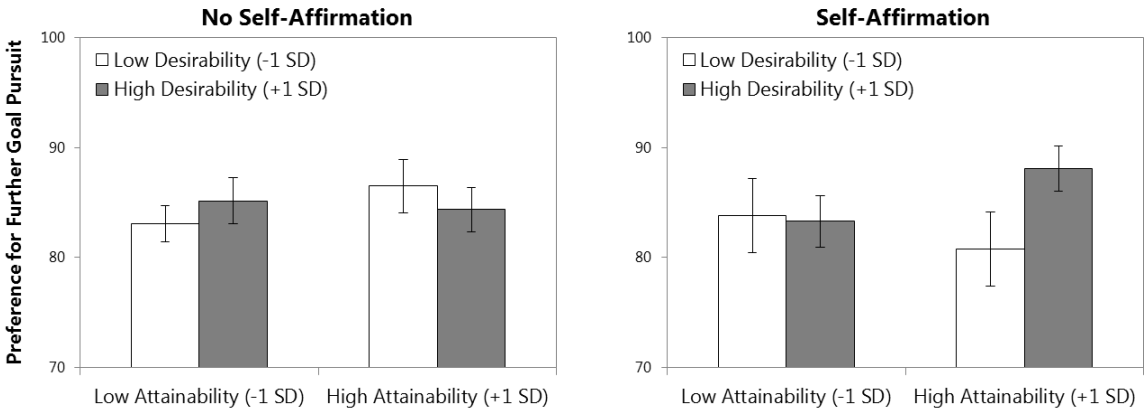

Figure 12: Individuals' preference for further goal pursuit versus disengagement as a function of self-affirmation condition, goal desirability at ±1 SD, and goal attainability at ±1 SD in Study 4. Error bars represent standard errors.

Brief discussion

Study 4 suggests that self-affirmation promotes the incorporation of goal desirability and attainability in the decision whether to hold on to or withdraw from an obstructed goal. It did not seem as if self-affirmation alters individuals' appraisals of goal desirability and attainability; rather, affirmed individuals used the goal's motivational characteristics to a stronger extent. Specifically, self-affirmed individuals acknowledged levels of goal desirability in their amount of planning when high goal attainability was given (and vice versa), whereas non-affirmed individuals also planned for goal pursuit if either goal desirability or attainability were missing. Analogous results emerged for the preference for further goal pursuit versus disengagement. Unexpectedly, self-affirmation did not increase planning among individuals who regarded their goal as both desirable and attainable. This may be due to the fact that planning in this subgroup was already high without self-affirmation, leaving not much space for further increase. For individuals in the control condition with goal desirability and attainability one standard deviation above the mean, planning was at the upper end of the five-point response scale ($\hat{y}$ = 4.37), indicating a ceiling effect. With regard to the preference for further goal pursuit (vs. disengagement), there was no ceiling effect for control participants with high levels of goal desirability and attainability ($\hat{y}$ = 83.42). Accordingly, we found that self-affirmation, more than a control task, pushed individuals toward goal pursuit if their goal was both desirable and attainable. As we found somewhat different results for the two outcome variables, future research should investigate whether self-affirmation likewise decreases intentions to pursue a goal that is hardly desirable or attainable and increases intentions to pursue a goal that is desirable or attainable; theoretically, we had expected both effects.

Discussion

People often perceive their worth as contingent on whether they succeed in the pursuit of their goals (e.g., completing a study degree, staying in a relationship). In the action crisis, the achievement of a personal standard is at risk (Brandstätter & Schüler, 2013), and individuals find themselves in the ambiguous situation to judge whether it is worth to keep up the struggle or they will be better off without the goal. In this research, we tested whether reminding individuals of their general worth might give them the required equanimity to devote their attentional resources to decision-relevant information and process it impartially (Howell & Shepperd, 2012; Klein & Harris, 2009; Legault et al., 2012). Building on the finding that

self-affirmation heightens reliance on self-relevant experiences, even if negative (Vohs et al., 2013), we postulated that affirmed more than non-affirmed individuals would acknowledge the informative value of their goal's motivational characteristics when it comes to a) the amount of planning and b) the question whether to stick to or abandon the goal.

Four experiments conducted to test this hypothesis yielded mixed results. Study 2 and 4 provided supportive evidence: Affirmed more than non-affirmed individuals based their amount of planning for further goal pursuit and their preference for further goal pursuit (vs. disengagement) on the attainability and desirability they ascribed to their goal. We might have concluded from this that self-affirmation helps to align one's motivation with relevant goal characteristics (Atkinson, 1964; Feather, 1982; Vroom, 1964), hadn't the finding failed to replicate in two other studies, where self-affirmation either did not have an effect (Study 1) or oriented individuals toward the further pursuit of their goal, irrespective of its motivational features (Study 3).

The inconsistency of findings raises the question in what respect studies may have diverged. The most obvious difference between studies was the value-related control task in Study 1 and the investigation of the effects within the context of one shared goal in Study 3. The goal to complete a study degree is a particularly important and self-relevant one with life-organizing properties (Koletzko, Herrmann, & Brandstätter, 2015) that may have diverged from the average of goals participants of the remaining studies stated. It might also be speculated that the effects of self-affirmation in an action crisis depend not only on the goal's desirability and attainability, but on additional variables. For instance, the amount of self-threat associated with an action crisis may be relevant, given that self-affirmation is mostly examined for its threat-repairing function (Critcher et al., 2010). While we demonstrated in previous research that an action crisis is self-threatening (Ghassemi & Brandstätter, in preparation), we did not test moderations with self-threat.

It also should be noted that although our hypothesis fits in with previous findings, it is a step ahead of what has been verified empirically. Previous tests of altered processing of threatening information as a result of self-affirmation were conducted in much less complex situations. For instance, participants were presented with information that was of high or low quality; this difference was *very easy* to see (Brinol et al., 2007; Klein et al., 2011). The critical test was to what extent information quality would be incorporated in individuals' response, depending on their status of affirmation. Even though researchers have suggested that self-affirmation improves the elaboration of threatening information (Brinol et al., 2007; Correll, Spencer, & Zanna, 2004; Klein & Harris, 2009) and helps to discriminate what is

primary from what is secondary (Wakslak & Trope, 2009), based on *how* studies were conducted, an alternative interpretation might be that self-affirmation increased individuals' motivation to rely on information that everybody knew to be relevant.

Unlike in previous investigations, we expected affirmed individuals to make better use of their own decision relevant goal appraisals, specifically, goal desirability and attainability. Therewith, affirmed participants had in our studies to refer to their own appraisals rather than information presented to them, and to select these appraisals out of a wealth of other information. Our hypothesis both implied that affirmed individuals would recognize the goal's desirability and attainability as decision relevant and that they would be sufficiently motivated to rely on these features as opposed to secondary (e.g., self-justification) concerns. However, maybe the identification of the goal characteristics as relevant did not reliably work. First, it is possible that self-affirmation simply does not facilitate the identification of relevant information when faced with information overload. Second, even if self-affirmation helps to identify relevant information, it might be information that is *subjectively* relevant. Notwithstanding researchers' view that goal desirability and attainability are crucial factors in goal setting (Atkinson, 1964; Feather, 1982; Vroom, 1964), this assumption is not necessarily held by everyone (or other factors are seen as relevant, too). Counter to this argument, it seemed that participants regarded the goal's desirability and attainability as relevant, given that, overall, these goal characteristics were positively related to planning and the preference for further goal pursuit.

In this research, we were interested in finding an intervention for alleviating the action crisis, why we studied the effects of self-affirmation in the realm of personal goals. While this approach heightens external validity, inconclusive findings point to the absence of the effect or too much heterogeneity involved in the methodological approach. Heterogeneity may stem from the circumstance that goal pursuits and, hence, difficulties leading to an action crisis may vary. Likewise, the effects of self-affirmation seem to be context-specific, and few mediators could be verified across domains and studies (Sherman & Cohen, 2006). If both difficulties associated with an action crisis and the operation of self-affirmation varies widely, it becomes difficult to identify replicating effects.

Consequently, future studies might benefit from more experimental control. We would suggest to study the effects of self-affirmation in the context of decisional conflicts, what has, to our knowledge, not been done before. An investigation of self-affirmation in this context might be interesting as having to make a decision with far-reaching consequences can be self-threatening (Diederich, 2003; Janis & Mann 1976; Josephs, Larrick, Steele, & Nisbett, 1992;

Zeelenberg, 1999). The advantage of decision making as study context is that all participants can be provided with the same information, and that desirability and attainability of given options can be varied experimentally. What, then, should be studied is whether self-affirmation increases individuals' ability to rely on primary and neglect secondary information (cf. Wakslak & Trope, 2009) when faced with information overload. Second, it should be studied whether self-affirmation affects the motives behind information search and processing. Affirmed (vs. non-affirmed) people should rely more on information that serves optimal decision making, even if inconsistent with a personal preference, and less on information that serves self-justification (cf. Sivanathan et al., 2008).

To identify strategies that may be of benefit for resolving the action crisis, studies may assess individuals' spontaneously applied strategies and their outcomes (e.g., time to resolution of action crisis, well-being). A first longitudinal study suggests that reminding oneself of cherished life domains is a strategy that people apply when confronting difficulty in the pursuit of a personal goal. Students (n = 76) who reported having experienced doubts with respect to their studies and having considered study dropout at least once in their student life were asked what they typically did in these situations. Descriptive statistics of the item assessing spontaneous self-affirmation ("In these situations, I think of something positive in my life (e.g., my friends, family, or hobbies) to regain strength", 1 = *strongly disagree*, 7 = *strongly agree*) suggest that self-affirmation is a strategy that individuals apply (M = 5.01, SD = 1.31), also when compared with conventional strategies (seeking advice from others: M = 4.17, SD = 1.73; ruminating: 4.78, SD = 1.43). Interestingly, individuals who currently experienced more severe action crisis in their studies and used relatively more self-affirmation than their peers reported higher life-satisfaction (action crisis x self-affirmation: β = .24, b = 0.22, SE = 0.08, $t(70)$ = 2.76, p = .007), controlling for life satisfaction at the prior measurement point. Thus, maybe self-affirmation is positively linked to another beneficial outcome when experiencing an action crisis.

The here presented studies oblige to a need that has been expressed in the field of goal disengagement, where researchers have pointed to the "significance of the development of interventions aimed at preventing and overcoming action crises" (Brandstätter & Herrmann, in press, p. 31). Unfortunately, they did not offer conclusive evidence. Yet, this should not discourage researchers to try to find an answer to one of the most pressing questions in research on the action crisis: the way this critical phase can be overcome.

General Discussion

Thinking about goal disengagement, two questions caught my interest: First, how do people disengage from a goal they once highly valued and pursued well-intentioned? Second, how can the decisional conflict between further goal pursuit and disengagement be resolved? Starting from the action crisis, my research addressed both of these questions. Investigating the longer-term processes in real-life goal striving, Part I and II allow conclusions about the disengagement process. Studying the action crisis from a perspective of decisional conflict, Part III and IV give first answers to the question how it can be resolved. What can be concluded from this research and what should be addressed in future investigations will be outlined in the following.

Part I and II: Integration of findings and open questions

Before individuals abandon a personal goal, a devaluation of its desirability and attainability takes place. This and previous research (Brandstätter et al., 2013) consistently show that the devaluation of the goal's motivational features is predicted by an action crisis. The analysis of trajectories of students who dropped out of their studies clarifies that the decrease in goal desirability and attainability, predicted by the experience of action crisis, does not stop until individuals finally abandon their goal.

The analysis of temporal trajectories further revealed that the action crisis becomes more and more intense until goal abandonment. This adds to previous knowledge that the action crisis increases the probability of goal abandonment, and more severe action crises predict earlier goal abandonment (Herrmann & Brandstätter, 2015). The present research shows for the first time that an increase in action crisis is predicted by low goal attainability. This finding demonstrates the relevance of insufficient outcome expectancies for motivation also in the course of ongoing goal striving, providing empirical support for a previously made assumption (Carver & Scheier, 1998; Janoff-Bulman & Brickman, 1982; Jostmann & Koole, 2009; Wrosch et al., 2013). Based on expectancy-value models of motivation (Atkinson, 1964; Feather, 1992; Vroom, 1964), we would have expected that also insufficient goal desirability predicts an increase in action crisis over time, however, did not find it in the studied goal context. The goal of completing a study degree is a highly valued and important one (Koletzko et al., 2015), implying that goal desirability might not have fallen below the necessary threshold to account for an increase in action crisis. Future studies in other goal

domains are needed to clarify whether this finding can be generalized. At present, it can be concluded that even in instances in which the action crisis is predicted by low goal *attainability*, people devalue the goal's attainability, but also (and even more) its desirability.

Theoretical and empirical approaches to goal disengagement share the view that disengaging from a personal goal is linked to depressive symptoms and negative affect (Brandstätter et al., 2013; Brandtstädter & Rothermund, 2002; Klinger, 1975; Wrosch et al., 2003). However, evidently, at some point, individuals usually have recovered from their loss and continue their lives without lasting impairments of well-being (Brandtstädter & Rothermund, 2002; Heckhausen et al., 2010; Taylor, 1983). This raises the question what is needed for depression to lift. One could think of restored well-being as an indication of disengagement being complete. Researchers have asserted that complete disengagement not only means to stop pursuing a goal, but also detach from it emotionally (Brandtstädter & Rothermund, 2002; Heckhausen et al., 2010; Wrosch et al., 2003).

One strategy to detach from a goal is to distance oneself from it, which brings us back to the devaluation of goal desirability. It includes the reappraisal that the goal is actually not that desirable or at least not essential for fulfillment and happiness (Heckhausen et al., 2010). The present research suggests that a devaluation of the goal's desirability may be adaptive for well-being. In the here reported studies, there was some evidence that a decrease in goal desirability is related to an increase in life satisfaction in situations in which goal termination is under consideration (i.e., the action crisis) or actually imminent. Apart from the need of replication, two questions remain to be addressed. First, does the change in goal desirability (and attainability) occur automatically or is it intentional to some extent? Both propositions have been made (Brandtstädter & Rothermund, 2002; Heckhausen et al., 2010). Second, does devaluing a goal's desirability (under some circumstances) also has its costs? I wonder to what extent downgrading a goal that originally was of subjective value may mar the view of one's own past and foster life regrets ("Why did I waste my time on this goal?"). Thus, the strategy's long-term, unconditional benefit still remains to be verified. Additionally, alternative strategies should be studied that contribute to emotional relinquishment and the maintenance of well-being in the face of goal failure.

The here reported findings suggest that the action crisis also is related to change on the level of individuals' overt goal striving and its measurable outcomes. Methodologically advancing previous investigations (Brandstätter et al., 2013; Herrmann & Brandstätter, 2015), this research shows that impairments in goal-related performance result from an action crisis. That these impairments were found to spill over to an unrelated task worked on right after an

action crisis was experienced suggests that motivational conflict in the pursuit of a (high-level) goal might have more large-scale implications for the individuals' goal system; deliberation about the costs and benefits of the obstructed goal may be easily instigated (e.g., by short reminders of the goal) and distract a person from his/her current activity. Moreover, as has been argued for the change in goal appraisals, decreasing performance might be more than a mere byproduct of goal disengagement. We have pointed out that detriments in goal-related performance may provide the objective ground to conclude that it is reasonable to abandon the goal. Therewith, performance impairments instigated by the action crisis had to be considered as integral part of the disengagement process itself.

In sum, this research strengthens the perspective that the goal disengagement is shaped by processes on various levels, some of which were object of this research. Figure 13 illustrates processes assumed to be involved in goal disengagement, with making no claims on completeness.

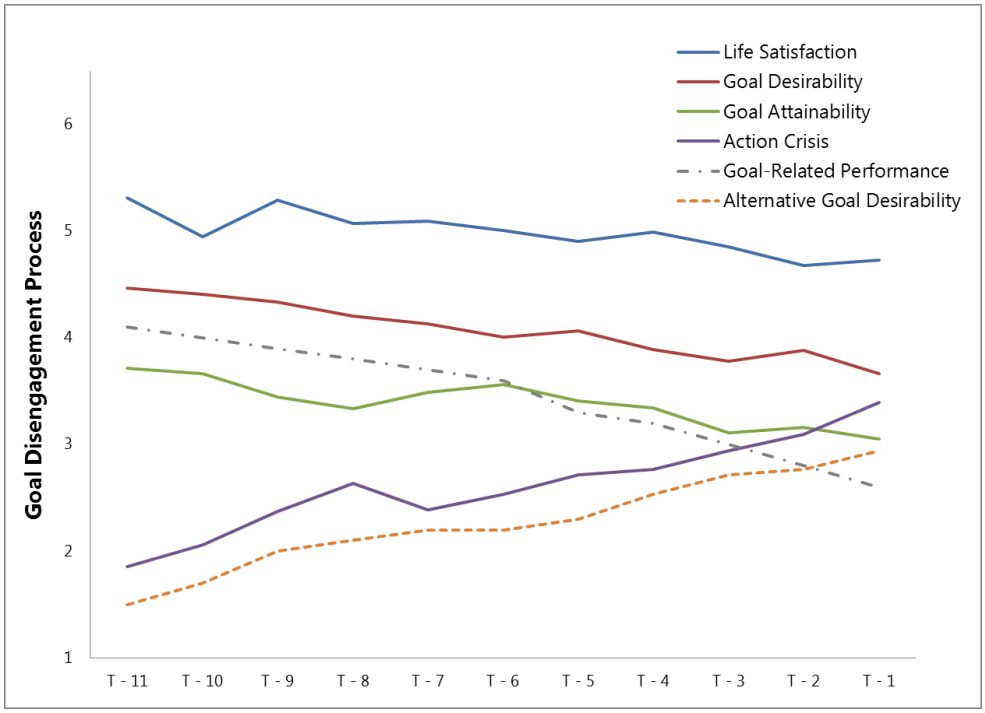

Figure 13: Assumed trajectories of different variables within the goal disengagement process.

Note. T (in T-1 to T-11) = time before goal abandonment. Solid lines represent mean trajectories of students who drop out of their studies in Study 2 of Part I. Dashed lines are theoretically assumed processes which are not data-based.

Future research should continue to investigate how the multiple "levels" displayed in Figure 13 are connected. For instance, it might be assumed that low performance in goal striving is reflected in subjective appraisals of low goal attainability, which may predict an increase in action crisis over time. An action crisis, in turn, predicts a devaluation of the goal's desirability and attainability as well as further performance impairments, which might translate into even lower goal attainability. This cycle may repeat itself until the point where individuals finally stop pursuing the goal and have detached from it emotionally, that is, where disengagement is complete. To note, the here reported studies did not test underlying processes. In other words, even though theoretical assumptions were made, we do not know yet how the action crisis predicts a devaluation of the goal's features, how it results in performance impairments, and what psychological mechanisms explain that low goal attainability predicts an increase in action crisis over time. To investigate these underlying processes will be an endeavor for future research.

Furthermore, one could easily think of additional processes involved in goal disengagement. It might be interesting to study trajectories of negative affect or depressive symptoms and their relation to other processes involved in goal disengagement. Several theories assign functional value to depression within the goal disengagement process (Brandtstädter & Rothermund, 2002; Klinger, 1975; Nesse, 2000), given that decreased interest in incentives (cf. relinquishment of goal commitment) and loss of energy (cf. withdrawal of behavioral efforts) are defining features of depression (American Psychiatric Association, 2013). Based on a phenomenon known as *depressive realism*, denoting that, in some situations, worldviews of depressed individuals are more realistic than those of their non-depressed counterparts (Alloy & Abramson, 1988), it may be asked to what extent depression has a role in the devaluation of the goal in timely succession of the action crisis, and, further, whether this change in goal appraisals builds the basis for depression to lift. This reasoning would transfer Wrosch and Miller's (2009) reasoning to an actual episode of disengagement from a specific goal (to repeat, they found that girls with higher levels of baseline depressive symptoms over time improved their goal disengagement capacities to a greater extent, which, in turn, was related to a reduction of depressive symptomatology). Somewhat counteracting this reasoning, in a previous study, higher levels of action crisis in personal goals predicted lower subjective goal attainability at the following measurement point even when negative affect at the prior measurement point was controlled (Brandstätter et al., 2013).

Another interesting development may be expected with respect to individuals' appraisal of alternatives to the obstructed goal. Within the context of romantic relationships it is known that over time and with increasing relationship commitment, perceptions of alternative partners become increasingly unfavorable (Johnson & Rusbult, 1989), fully in line with mindset theory (Gollwitzer, 2012). In a longitudinal study, this tendency was found to be more pronounced among individuals in stable relationships, while among individuals who later broke up, appraisals of alternative partners became more positive over time. The authors noted that it had to be asked "whether the observed findings resulted from devaluation of alternatives by highly committed persons or from enhancement by the less committed" (Johnson & Rusbult, 1989, p. 979). Based on current knowledge, it seems highly conceivable that an action crisis predicts an increasing desirability of alternative goals. Maybe the devaluation of the obstructed goal is even a precondition for alternatives to be taken into account, following the principle "Even if the grass is greener on the other side of the fence, happy gardeners will be less likely to notice" (Miller, 1997, p. 758). Borrowing a procedure applied in previous research (Miller, 1997), one might design a study in which participants in a committed relationship are presented with pictures of alternative partners (vs. equally attractive persons who are ineligible as partner). Behavioral attentiveness to pictures (i.e., seconds spent looking at them) and self-reported desirability of alternative partners might be positively correlated with action crisis severity in and subjective desirability of one's current relationship, and these measures might predict the probability of later break-up. In sum, in light of the relevance that has been attributed to goal reengagement for well-being (Wrosch et al., 2013), the role of alternative goals merits further attention.

To date, not much is known about when individuals stop pursuing their goals, and whether the multiple processes involved in goal disengagement are of similar predictive value for behavioral and emotional disengagement. For instance, it might be hypothesized that a decrease in goal desirability mostly predicts emotional disengagement, while a decrease in goal attainability mostly predicts behavioral disengagement. It could also be hypothesized that emotional disengagement only is complete when the desirability of the goal has decreased and, additionally, desirable alternatives have entered individuals' mind (cf. Wrosch et al., 2013). With regard to highly valued goals, (some) individuals may only be able to cease their efforts when negative affect in relation to the goal has reached a certain threshold. Future research should examine which moderators (related the person, goal, or situation) influence how long an action crisis prevails and under what conditions it results in goal abandonment (Herrmann & Brandstätter, 2015).

Finally, not much is known about the micro-dynamics of the experience of action crisis (i.e., doubt, disengagement impulses) on a day-to-day basis. The proposition has been made that the dilemma between persistence and disengagement may be manifested in "wavering between holding on and letting go" (Brandtstädter & Renner, 2002, p. 123), or, in other words, fluctuating levels of action crisis. An empirical investigation of the amplitudes of an action crisis depending on experiences in goal striving (e.g., failure and success) would be of interest for a better understanding of the goal disengagement process.

Part III and IV: Integration of findings and open questions

Part I and II of this research focus on how the action crisis fits into the disengagement process. The perspective this research takes can be compared to that of a bird's eye, covering an extended time-span. However, as described before, the action crisis does not inevitably lead to goal abandonment (Brandstätter & Herrmann, in press). In the first place, it is an intrapsychic conflict between persistence and disengagement, in which the individual weighs the costs and benefits of both alternatives (Brandstätter & Schüler, 2013). Due to its subjective aversiveness, it can be assumed that individuals will be motivated to overcome this conflict timely. Researchers have identified the investigation of interventions that help to resolve the action crisis in either the direction of continued goal pursuit or disengagement, depending on the characteristics of the situation, as an important avenue for further research (Brandstätter & Herrmann, in press; Herrmann & Brandstätter, 2015).

The identification of interventions to the action crisis requires some diagnosis of the difficulty associated with it. Part III did so by testing the assumption that experiencing an action crisis is self-threatening. While the decision whether or not to continue a personal goal arguably is difficult in its own, it may be complicated by the fact that people do not make it independently from their self. Findings of Part III suggest that individuals' self-evaluation and affective experience is buffered by reflecting on an action crisis (vs. unobstructed goal striving), providing support for the hypothesis. An analysis of the essays participants had written suggests that difficulties associated with an action crisis are diverse: Participants mentioned as difficult failure experiences in goal pursuit, negative (self-)regard related to abandoning the goal, the imminent loss of a valued end, and the risk of making a decision they will later regret. Thus, several phenomena seem to concur that were to date addressed in separate strands of research: failure experiences in goal striving (Carver & Scheier, 1990), the need for self- and external justification in decisions about persistence and disengagement

(Brockner, 1992; Staw, 1981; Zhang & Baumeister, 2006), the relevance of goals for identity and well-being and the resulting difficulty of disengagement (Brunstein, 1993; Emmons, 2003; Wrosch et al., 2003), and psychological stress associated with decisional conflicts (Janis & Mann, 1967; van Harreveld et al., 2009).

From previous research it is known that self-threat often has maladaptive consequences (Steele, 1988; Cohen & Sherman, 2014). Studies have shown that in situations that share similarities with the action crisis (i.e., failure on a self-initiated course of action) people stubbornly persist instead of ending the failing action (Brockner, 1992). This sacrifice in decisional accuracy was explained with individuals' need for self-justification, in other words, their motivation to mitigate self-threat (Zhang & Baumeister, 2006). Threat has also been discussed to be associated with constrictions in information processing and a loss of sight on what is essential (Cohen & Sherman, 2014). Thus, feeling threatened may get in the way of a well-reasoned resolution of the action crisis.

Reversely, a strategy that counteracts self-threat might heighten decisional accuracy and reduce individuals' motivation to misuse decisions about persistence and disengagement for self-justification (Simonson & Staw, 1992). Decisional accuracy seems particularly important given that a major challenge in real-life goal striving lies in accurately discriminating situations with potential for success from situations doomed to failure (Emmons, 2003; Janoff-Bulman & Brickman, 1982; Lench & Levine, 2008; Simonson & Staw, 1992; Wrosch et al., 2003). Based on these considerations, in Part IV, we tested whether self-affirmation (Steele, 1988), a strategy known to alleviate self-threat (Cohen & Sherman, 2014), could be of use in an action crisis, and found mixed results. Two studies provided supportive evidence that the affirmation of an independent value helps individuals to align their preference for goal pursuit or disengagement on the motivational features of their goal, its desirability and attainability. However, in two other studies, this finding failed to replicate, for which potential explanations were offered in the discussion of Part IV; mostly they can be subsumed under the heterogeneity of action crises as well as the context-specificity of self-affirmation effects.

Integrating Part III and IV, I would like to discuss a further limitation. Part III of this research was devoted to the investigation whether or not the action crisis may be self-threatening. However, it did not investigate the consequences of such an experience of self-threat. Even though, based on previous research, it seems plausible to assume that feeling threatened has negative consequences, this proposition has not been empirically verified in an action crisis. In future research, it should be investigated if and under what circumstances

individuals suffer from reduced clarity in the action crisis and the subjective difficulty to discriminate between what is primary and what is secondary – an experience known as *hypervigilance* (Janis & Mann, 1967). Furthermore, it might be insightful if and under what conditions an action crisis leads to entrapment. In the context of personal goals, an adapted operationalization of entrapment had to be found, which might be a longer time until the person gives up.

Following from the heterogeneity of personal goals, it can be assumed that in specific action crises, some difficulties will be more paramount than others. Our proposition was that self-affirmation changes how decision-relevant information is processed, specifically, that it helps people to align their intentions to the circumstances they encounter in goal pursuit. However, it may be that only among individuals who have lost focus on what is essential (i.e., the goal's attainability and desirability), self-affirmation helps to undo this adverse effect of threat. In a similar vein, it might be expected only among individuals who fear the negative implications that one option would have for their self, self-affirmation puts the threat into perspective and make it loom less large (Critcher & Dunning, 2014), giving people the required equanimity to deal with the situation independently of these self-justification concerns. In situations in which these difficulties do not exist or are of a completely different nature, self-affirmation might not have an effect.

Taken together, future research should more systematically analyze the difficulties that prevent individuals from resolving the action crisis. Depending on the predominant difficulty, interventions may be targeted to overcome it specifically. This means that different interventions might be needed in an action crisis, depending on the characteristics of the situation. The present research has laid the foundation by suggesting that experiencing an action crisis is self-threatening.

Methodological limitations and directions for future research

In this section, I will discuss methodological limitations of this research, and present ideas how to investigate the action crisis in future studies.

Online vs. lab studies. Most of the here reported studies were online rather than lab studies. The disadvantages of internet based studies are obvious and well-known; they include, but are not limited to the difficulty that the situation in which data are collected is, compared to the lab, much less controlled (Reips, 2002). For instance, it is unknown, what confounding influences operate during survey taking (e.g., noise, distractions), how much

time participants spend on it, and whether they interrupt their participation, which is especially detrimental when an experimental manipulation is involved. Due to the easy access to study material, there will always be a certain proportion of participants that does not fully read task instructions and clicks through the study without much care. Of course, to some extent these problems may also arise in the lab, however, in the presence of the experimenter and the expectation that participation will take a certain amount of time, most subjects will probably feel more obliged to take study demands seriously. In light of these disadvantages, why rely on online studies?

The outlined disadvantages are confronted with a number of advantages that explain the tremendously increasing use of internet-based studies that psychological science has experienced over the past years. Online studies allow for such efficient testing that sample sizes can be achieved that would be impossible to reach when participants were tested in the lab, mostly due to time-constraints, but also due to money-constraints if experimenters need to be paid (Gosling, Vazire, Srivastava, & John, 2004; Reips, 2002; Wright, 2005). These significantly larger sample sizes not only are assumed to outweigh increased data "noise"; they also conform to a requirement that is posed for peer-reviewed publication in the aftermath of the replication crisis in empirical psychology (Cumming, 2014; Fiedler, 2017; Pashler & Wagenmakers, 2012; Simmons, Nelson, & Simonsohn, 2011). A further advantage of online studies is their providing access to more diverse and heterogeneous samples, for instance, by using panel providers or platforms like Amazon Mechanical Turk (Gosling et al., 2004; Reips, 2002; Wright, 2005). Laboratory studies, on the contrary, are typically taken by students coming from the same field of study (i.e., psychology), cultural background (i.e., German speaking), gender (i.e., female), and age (i.e., between 20 and 30 years). When conducting the here presented studies, in the majority of cases, I came to the conclusion that the advantages of online studies outweigh their disadvantages. In my view, whether future studies on the action crisis should be conducted online or in the lab has to be decided on a case-by-case basis.

Experiments vs. correlational studies. Published research on the action crisis is mostly based on longitudinal studies, in which participants are repeatedly queried about the pursuit of a personal goal (for an exception, see Brandstätter & Schüler, 2013). As correlations by nature a) prohibit conclusions about causal effects and b) can be distorted by unstudied third variables, three of the here presented projects at least partly used experimental designs. This, however, came with methodological difficulties on its own.

For a valid test of my research questions it seemed mandatory to study personal goals rather than assigned task goals. This raised the question how to get access to people who currently experienced an action crisis. Specifically recruiting participants who met this condition was an option we relied on in Study 3 of Part IV, where we invited students who considered study dropout. While this procedure is suitable for a study design, in which all participants are supposed to be in an action crisis, it is less applicable when the comparison of interest lies between individuals *with* and *without* an action crisis (as it was the case in Part III). Moreover, inviting a selective sample bears the risk that individuals are not only selective in the intended criterion (i.e., the action crisis) but also in other criteria, for instance, psychological health (e.g., depression). Generalizations of results have then to be made with even greater caution.

Based on these considerations, in the experimental studies presented here, the action crisis was induced by means of procedures that were successfully applied in previous research. Whereas in Part II, the experience of action crisis was induced by means of a written scenario depicting a protagonist that participants would supposedly find it easy to identify with (Brandstätter & Schüler, 2013), in most experiments, participants were asked to select a personal goal about which they did versus did not experience an action crisis (Part III and IV). Even though manipulation checks revealed the overall success of this procedure, two methodological difficulties were mentioned in the discussion of Part III. First, the goals participants selected not always matched instructions in terms of action crisis levels experienced. Obliterated exclusiveness of experimental conditions (i.e., high within- and low between-group variance) may impede the detection of group differences. Second, the detection of effects may have been complicated by the fact that, in our studies, the action crisis was studied isolated from current goal striving and in a situation, in which its experiential features were not necessarily salient.

Although experimental studies, generally and in the investigation of the action crisis, are desirable, the correlational approach occurred to me more easily applicable and more fruitful in its results. Also for correlational studies, methodological advancements are conceivable that could be applied in future research. Future studies could carry on an investigation that we started in Study 2 of Part I, namely the examination of trajectories of individuals who ultimately disengage from their goal. This prospective approach requires a quite large number of participants to begin with, and benefits from an investigation in a goal domain in which a high dropout rate can be expected. Such domains include, but are not limited to, goals where individuals have to pass difficult selection processes (e.g., assessment

exams for psychology students, entrance exams for prospective medicine students, assessments for pilot training or for entering the Swiss army, model or singing contests) or where individuals have to undergo medical treatment with uncertain outcome (e.g., fertility treatment to attain the goal of having a child). These studies would allow to study individuals' well-being after goal failure depending on processes related to goal disengagement in the final phase of goal striving. A further methodological advancement would be the use of diary or experience-sampling studies (Csikszentmihalyi & Larson, 2014; Mehl & Conner, 2012). These would be particularly suited to study more fine-grained processes in relation to the action crisis. These micro-processes could not be analyzed within the longitudinal studies implemented to date, in which several weeks passed between consecutive measurement points. Diary or experience-sampling studies also imply the potential to present interventions repeatedly, a procedure that previous research has relied on to increase their impact (e.g., Miyake et al., 2010). To note, using these study designs, the investigation of the action crisis would even more call for the necessity to study personal goals that are pursued on a regular basis.

Goal domain. Several of the here presented, but also previous studies have examined the action crisis in the context of the goal to complete a university degree (e.g., Ghassemi et al., 2017; Herrmann & Brandstätter, 2015). This can be ascribed to the several advantages of this goal domain, which were outlined in Part I and II: First, the easily accessible student population pursues this goal; second, it is an important and self-defining goal; third, it can be ensured that the goal is regularly pursued; fourth, there is a sufficient proportion of students who experiences doubts; fifth, with study dropout, the investigation of goal disengagement is of high personal, but also societal relevance. Nevertheless, an extension of the investigation of action crisis to other goal contexts would be desirable for a generalizability of findings. Potentially, intimate relationships could be a worthy context of investigation. Most people pursue the goal of living in a happy and stable relationship, and most people, at some time in their lives, face the question whether to stay with or leave the current partner. Certainly, an investigation within a completely different goal domain than that of intellectual or physical achievement would extend our current knowledge of goal disengagement.

Epilog

In the last two decades, psychological research has made significant progress in investigating how and when people disengage from personal goals. The action crisis has proven a suitable starting point to address questions related to persistence and disengagement. However, as the previous discussion may show, research on goal disengagement in general and the action crisis in particular has just begun. More studies on how the action crisis unfolds over time, how it is experienced, and how it can best be resolved are needed. Answering these questions may be of interest for the many people experiencing doubt with respect to a personal goal, and lay the foundation for psychological interventions.

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Supplement of Part I

We intended to analyze hypothesis 2 in the full sample of Study 2 as similar as possible to Study 1, despite the obvious differences in study designs. To acknowledge for repeated observations, HLM was used. As when testing hypothesis 1, between-person effects were differentiated from within-person effects. First, we ran a random intercept model, in which goal desirability was regressed on goal desirability at the previous measurement point. We extracted residuals and saved them as new variable in our data file, indicating the residual change in goal desirability (Δ goal desirability) between two consecutive measurement points. For hypothesis testing, a random intercept random slope model was estimated, in which life satisfaction at a given measurement point was predicted by fluctuations in action crisis around the person mean at the previous measurement point, fluctuations in the change in goal desirability from the previous to the current measurement point, and the two predictors' product term (to capture within-person effects). Further, the person mean in action crisis, the person mean in change in goal desirability, and their product term were included (to capture between-person effects). Control variables were fluctuations in life satisfaction at the previous measurement point, fluctuations in goal attainability at the previous measurement point, the person mean in goal attainability, and time. Random slopes were estimated for fluctuations in action crisis at the previous measurement point and the change in goal desirability between the previous and the current measurement point.

Table 9 displays results of the model. Most important are the two interactions between action crisis levels and change in goal desirability between two consecutive measurement points. There was no significant interaction on the within-person level. The interaction on the between-person level was marginally significant.

Table 12: Results of a Multilevel Model Predicting Fluctuations in Life Satisfaction in the Full Sample of Study 2.

	Life satisfaction *t*				
				CI_{95}	
Fixed effects	*B*	*SE*		Lower	Upper
Intercept	5.200	0.065	***	5.074	5.327
Level 1 (within-person)					
Action crisis *t* –1	–0.127	0.039	**	–0.203	–0.051
Δ Goal desirability *t* –1 to *t*	0.246	0.044	***	0.161	0.332
Goal attainability *t* –1	0.063	0.037	†	–0.010	0.135
Life satisfaction *t* –1	0.103	0.025	***	0.054	0.152
Time	–0.007	0.004		–0.015	0.002
Action crisis *t* –1 x Δ Goal desirability *t* –1 to *t*	–0.003	0.075		–0.150	0.145
Level 2 (between-person)					
Action crisis	–0.641	0.086	***	–0.810	–0.471
Δ Goal desirability *t* –1 to *t*	0.084	0.080		–0.073	0.241
Goal attainability	–0.042	0.075		–0.188	0.105
Action crisis t–1 x Δ Goal desirability t–1 to t	–0.085	0.047	†	–0.178	0.008

			CI_{95}	
Random effects	Est	Corr	Lower	Upper
Level 1 (within-person)				
Residual	0.531		0.512	0.551
Level 2 (between-person)				
Intercept	0.759		0.682	0.844
Action crisis *t* –1	0.201	0.149	0.124	0.326
Δ Goal desirability *t* –1 to *t*	0.226	0.134	0.140	0.363

Model fit	Est
–2 log likelihood	-1728.842
AIC	3493.685
BIC	3592.169
ICC	0.710

Using Preacher, Curran, and Bauer's (2006) online tool for probing HLM two-way interactions we found that among individuals with low levels of action crisis (1 SD below the mean), an increase in the desirability of one's studies was descriptively positively linked to life satisfaction, $b = 0.17$, $SE = 0.11$, $t(194) = 1.52$, $p = .128$; by contrast, among students with high levels of action crisis (1 SD above the mean), change in goal desirability was not related to life satisfaction, $b = -0.001$, $SE = 0.07$, $t(194) = -0.02$, $p = .988$. Rather, among students

experiencing an action crisis, life satisfaction was significantly reduced compared to students not experiencing an action crisis. There was a significant negative relationship between action crisis and life satisfaction both for students who upgraded the desirability of their studies from the previous to the current measurement point (1 SD above the mean), b = -0.73, SE = 0.11, $t(194)$ = -6.76, $p < .001$, and for students who downgraded the desirability of their studies from the previous to the current measurement point (1 SD below the mean), b = -0.56, SE = 0.09, $t(194)$ = -6.37, $p < .001$ (see Figure 14).

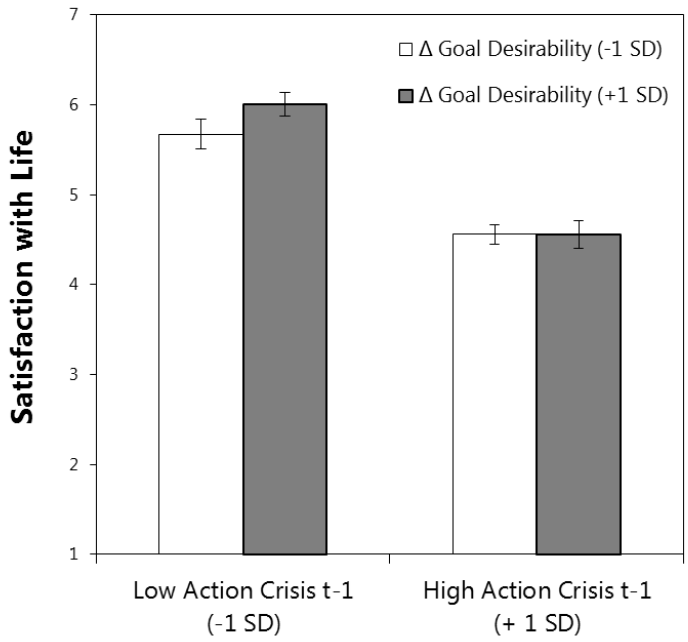

Figure 144: Life satisfaction as a function of action crisis and change in goal desirability between two consecutive measurement points at ±1 SD in Study 2. Error bars represent standard errors.

Taken together, the analysis in the full sample of Study 2 does not justify the conclusion that, in the presence of an action crisis, downgrading the goal's desirability benefits life satisfaction. However, it seems as if elsewise (descriptive) benefits of increasing goal desirability are nullified in an action crisis.